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JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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The American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will also meet in New York City in 1919.

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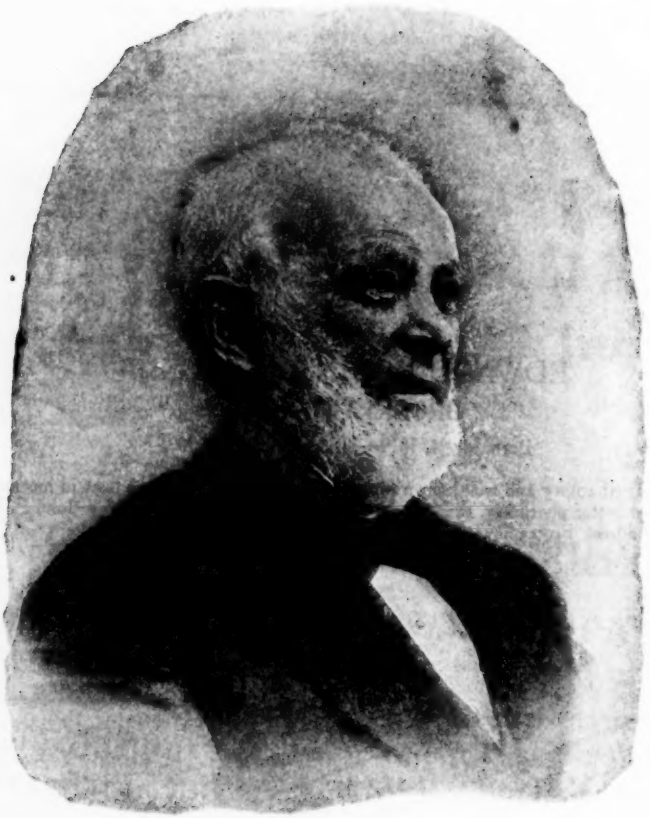
EDWARD ROBINSON SQUIBB

BROOKLYN, N. Y.

Born July 4, 1819—Died October 25, 1900.

"His recognized ability and well-known integrity raised the standard and set in motion forces tending toward better pharmacy, the influence of which is felt unto this day."—John F. Patton, Presidential Address, Proceedings A. Ph. A. 1901, p. 7.



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E. R. Squibb

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. VII DECEMBER, 1918 NO. 12

EDWARD ROBINSON SQUIBB.

A number of reasons, that will become apparent, prompt the presentation of this sketch.

Dr. E. R. Squibb was born at Wilmington, Del., July 4, 1819, hence the New York meeting of the American Pharmaceutical Association will be held during the centennial year of his birth.

In 1857 Doctor Squibb aided in the establishment of a medical supply laboratory in Louisville, Ky., and the chief medical purveyor of the Army induced him to establish the laboratory in Brooklyn. His work in the interest of the Army and Navy, pharmacy and medicine, is a matter of record. The report of the Committee on Drug Market, A. Ph. A., of 1863, of which he was chairman, is comprehensive, and some of the items, under discussion, were subjects of recent considerations.

We quote from a paper by Prof. Curt P. Wimmer on "Edward R. Squibb's Lecture Course in Pharmacy," before the Historical Section, A. Ph. A., at Chicago:

"In his (Doctor Squibb's) introductory lecture (1869), he wrote on the blackboard: 'A pharmacist is not a druggist,' and by way of explanation said: 'A druggist is a merchant in drugs, a dealer in substances which, though originally used in medicines, came to be used in many other arts. The pharmacist, synonymous with pharmaceutist and apothecary, but not with druggist or chemist, is an educated, qualified practitioner of the art of pharmacy. He is a dealer in substances used to prevent and relieve distress; who has the knowledge and skill to secure a proper quality in his merchandise; to prepare this for its ultimate uses; and to secure it against accidental and criminal misapplication. The druggist is a merchant like the grocer, the dry goods dealer, etc. The pharmacist may be all this, but must be very much more.' "

The following data are taken from a sketch prepared some years ago:

"Edward R. Squibb served an apprenticeship with pharmacists of Philadelphia from 1837 to 1842, as a preparation for the study of medicine. He graduated from Jefferson Medical College in 1845, served as assistant demonstrator of anatomy and practised medicine until 1847, when he entered the Navy as assistant surgeon and saw active service for four years. In 1852 he was transferred to the Naval Hospital in Brooklyn, then under the direction of Dr. Franklin Bache.

While serving in the Navy he observed the poor quality of many of the medical supplies furnished on contract. Through their efforts, Congress was led to consider 'quality first and price second.' In 1857 he resigned his commission to aid in establishing a medical supply laboratory in Louisville, Ky. His success attracted the attention of the chief medical purveyor of the Army, who induced him to establish a laboratory in Brooklyn, N. Y. In December 1858, when scarcely well under way, the laboratories were destroyed by fire, and while attempting to save his books his face and hands were terribly burned. In 1869, after having declined flattering offers to teach in the colleges of medicine, he accepted the chair of pharmacy at the New York College of Pharmacy, but did so on two conditions—he was to receive no pay and he was not to be called Professor. He held this position until 1872. He joined the American Pharmaceutical Association in 1855 and was made a life member in 1900. He was its vice-president in 1858–59. In 1873 he received the honorary degree of Doctor of Pharmacy. He was a member of the Pharmacopoeial Revision Committee of 1860; a member of the Convention for the Revision of 1870, but refused to serve on the committee; elected a member of the Convention for the Revision of 1880, but resigned. The convention of 1900 thanked him for his painstaking work in the realm of pharmacy for fifty years, and for the unselfish manner in which he had always placed the result of his labors at the disposal of the several committees of revision."

As a member of the American Pharmaceutical Association, Doctor Squibb took an active part in its deliberations, as evidenced by the pages of the Proceedings. His studies and work in improving the process of percolation are printed in the Proceedings of 1865, 1866, 1867 and 1872. A paper by him "Notes and Suggestions upon Some of the Processes of the United States Pharmacopoeia, Especially Directed to the Committee of Revision," contains in outline his process for the manufacture of ether, spirit of nitrous ether, etc., and pleads for the introduction into the Pharmacopoeia of "that which relates to simple, reliable tests of purity of its materials and products."

Doctor Squibb was an indefatigable worker, a careful observer, possessed of high intellectual attainments, and actuated by positive convictions. He was a pioneer manufacturer of pharmaceuticals and chemicals, having entered the fields of American pharmacy soon after the organization of the American Pharmaceutical Association.

E. G. E.

OFFICERS-ELECT OF AMERICAN PHARMACEUTICAL ASSOCIATION, 1919–1920.

The result of the vote by mail, for officers of the American Pharmaceutical Association, has been announced as follows:

President—L. E. Sayre, Lawrence, Kas.

First Vice-President—Theodore J. Bradley, Boston, Mass.

Second Vice-President—Harry Whitehouse, Johnson City, Tenn.

Third Vice-President—E. Fullerton Cook, Philadelphia, Pa.

Members of the Council—J. H. Beal, Urbana, Ill.; Charles H. LaWall, Philadelphia, Pa.; S. L. Hilton, Washington, D. C.

EDITORIAL

E. G. EBERLE, Editor 253 Bourse Bldg., PHILADELPHIA

THE HOLIDAYS.

A FLOOD of emotions consonant with a cheerful, happy time of charity and good fellowship is borne upon us by this joyful season.

While our thoughts are, naturally, with those who are near and dear to us, we cannot be forgetful of those who gave themselves as a sacrifice for the cause of our country, and of those who are sorrowful because of their loss and affliction. The present time is, therefore, most opportune for participating in the undertaking of the American Pharmaceutical Association in behalf of our soldier and sailor pharmacists, outlined on page 1005 of the November issue of the JOURNAL and further explained in the pages of this number. We join in many worthy purposes during this season, but this resolution presents a special, unusual opportunity to evidence our fellowship and convey assurance to the Government and to the public that we are optimistic relative to the mission of pharmacy, and convinced of its importance to humanity. Pharmacy will be judged, more than ever before, by the estimate we put upon ourselves.

We extend our greetings—"A Merry Christmas for All," and arrange the words of our Christmas Wish in this way: That our impulses will be actuated by a desire to be of service to others, and to ourselves; that our strength may be equal to the greater duties that have come upon us—as citizens, as pharmacists and as members of this Association. May all of us be able to bring joy to others and thereby share the rich heritage of the giver!

The most eventful year of history is coming to a close, bringing us to a new year fraught with equally important, though very different problems. We share in the responsibilities as citizens, but the discoveries in medicine during the war bring the need of research work to pharmacists. The present high standards demanded by the medical profession point to the necessity of having a larger number of trained pharmacists who can and will collaborate in related pharmaceutical research. Pharmacy is part of the mosaic, medicine, and permanent results of the discoveries are dependent upon the intelligent coöperation of the several branches. We have before us a wide field for our activities and the possible benefits therefrom for humanity, and the advancement of pharmacy should spur us on to our very best efforts. It is only by good team work, genuine cooperation, sympathy and a measure of unselfish devotion that real success can be achieved in the field of medicine.

We should be masters of our profession and see that pharmacy does not lag, especially during this period when great progress must and will be made in all

the industries and professions. There is no incompatibility between a strict observance of professional ethics and good business management. In the drug business, with which pharmacy is associated, the latter is essential; in fact, the success of a business or profession, in this respect, in a degree, is a measure of its importance. While it is highly desirable that pharmacy be given more recognition in the drug store, and the separation of pharmacy from the multiplicity of stock that characterizes many of the modern drug stores a consummation to be hoped for, there is no reason why a properly conducted pharmacy should not be possible within a drug store. The truth is, the greater number of our foremost pharmacists, due to present environments, are also merchants, who are observant of business and professional ethics. Ethics is the doctrine of man's duty in respect to himself and the rights of others. The course of progress in pharmacy should be directed for the benefit of the greatest number. The business of the drug store should be conducted according to modern ideas and methods.

Our wish for a Happy New Year conveys the hopes for a liberal share of prosperity and the joy of good health. We bespeak your intensified interest for pharmacy and the Association. If the revenue of the JOURNAL is augmented the possibilities for other work of the Association are increased. The encouragement of new patrons for the advertising pages is one of the means to that end. These have been trying times for publications and the difficulties are not immediately overcome by the prospects of peace. A word from the members to possible advertisers is worth more than a letter of solicitation from the office, therefore your coöperation is asked for.

Work in the Association gives pharmacists the opportunity of expressing their thoughts concerning pharmacy and the drug business—of exerting their influence; a broader viewpoint is developed and a higher appreciation of their coworkers is inspired.

The substance of our message finds expression in the following: That pharmacy may progress during 1919 through a greater enthusiasm and better coöperation among the members of the Association; a willingness to make some personal sacrifices so that pharmacy and the Association may become more effective as an agency for good to the votaries, and of greater service to humanity. That there may come the realization that however much pharmacists may have done for pharmacy and the Association, they, themselves, have profited more, by giving. That pharmacists and druggists may develop a larger measure of professional and business efficiency, upon which the world is now putting so large a premium. That the year 1919 will be the biggest year in the world's history for pharmacy and the drug business, because the achievements, successes and progress of the past are added to its opportunities. E. G. E.

A PROPOSED RESEARCH INSTITUTE.

ON the evening of November eighth, the New York Section of the American Chemical Society held a highly interesting and important meeting at which the subject under discussion was the founding of a research institution with a capitalization of from one to five million, for the purpose of coöperative study of the chemistry and pharmacology of synthetic organic chemicals, designed for medical use.

The meeting was arranged by the chairman of the Section, Dr. Charles H. Herty, who, in one of the editorials in the September number of the *Journal of Industrial and Engineering Chemistry*, had submitted the proposition in general terms to the ten thousand members of the American Chemical Society. Other addresses were made by representatives of the Bureau of Chemistry, of the Rockefeller Institute, of the Mellon Institute, of the drug manufacturers and of the tar products manufacturers. Curiously enough, the one group which has been attempting work along this line, the Council on Pharmacy and Chemistry of the American Medical Association, was not represented unless Doctor Alsberg is considered in a dual rôle of head of the Bureau of Chemistry and member of the Council on Pharmacy and Chemistry.

It is a matter of interest to note that at least two of the speakers are members of the American Pharmaceutical Association and it is hoped that this presages that when the institute comes into being, American Pharmacy will be adequately represented.

The movement is one of vital importance to every member of the A. Ph. A. and furnishes the best argument for the federation idea which is now dominant in American Pharmacy. It also proves the need of aggressive work on the part of the Research Committee of our Association.

Critics of the A. Ph. A. say that while we talk, others act. There is a very present danger if we do not bestir ourselves and act right now the sneer will become a fact. For twenty years we have talked of an institution somewhat resembling the one that Doctor Herty has in mind: notably in 1901, when the Procter memorial was under discussion and in 1912, when an A. Ph. A. Home was discussed on the pages of this JOURNAL. The Procter Memorial resolved itself into a statue without a site or a pedestal; the A. Ph. A. Home is in a somnolent condition; and now, while we are talking about federation, an organization but remotely interested in medicine and pharmacy takes up a proposition that all branches of American Pharmacy could and should have brought about years ago.

The foregoing paragraph is not intended as pessimism. It bluntly states unpleasant facts in an endeavor to stir American Pharmacy into action. The American Pharmaceutical Association, during its sixty-six years of existence, has ever held aloft the beacon light and urged American Pharmacy to "follow the

gleam," and it is not always the Association's fault that what it has proposed has not been carried out.

Such is strikingly the case in the present situation. If the proposed research institute does come into being without proper pharmaceutical representation, the blame will rest on the entire personnel of American Pharmacy and not merely on the pathfinder—the American Pharmaceutical Association. H. V. A.

DISCONTINUANCE OF THE STUDENTS' ARMY TRAINING CORPS.

IN the November issue of the JOURNAL considerable space was devoted to the Students' Army Training Corps and an approved Pharmacy War Course. A number of schools made preparations for giving these military students a training and education in pharmacy, and quite a number of enlisted men were enrolled. Now, before the first term of instruction has been completed, comes the order for immediate demobilization. We have no direct information, at this writing, that the order applies, immediately, to pharmacy schools, but presume this is the case; whether this is the effect of the order or not, the comment will apply in a general way.

The S. A. T. C. proposition was a new one; the thought uppermost in the minds of the people was preparation for war, so it would have been surprising if the devised plan for educating young men while training them for military service had proven entirely satisfactory to all concerned. The military training was of prime importance in the scheme, hence, the various institutions, engaging in the work, were lost in the process of military standardization.

It would seem that, financially, the Government is responsible to the schools or colleges for the terms of its contract with them or, if not, obligated to an adjustment of the expenses incurred by these institutions in preparing to meet the requirements of the Government. Most educational institutions, including those of pharmacy, were seriously handicapped by the war and, while the S. A. T. C. was looked upon as an opportunity for carrying on the work of the schools, their acceptance of the plan was, in a measure, prompted by a desire to coöperate with the Government. Taking these facts into consideration, the opportunity for experimentation might have been improved by studying the adaptability of the courses for universal military training. If the latter is adopted then education of the youth must also be provided. True, our military schools have solved the problem, but pharmacy should also be taught, and here was an opportunity which might have been tested out. The same thought applies to other branches. It would have been necessary to rearrange the courses by reintroducing the flexibility and individuality of the institutions wherein these courses had been installed, but this would have enabled them to continue their work, even though the number of students had been materially reduced.

While most of the medical schools entered into the S. A. T. C. plan, because it was a war measure, they were ready to discontinue the program when hostilities ceased. It is probable that pharmacy and technical schools would have preferred to continue the course under a rearrangement of the teaching schedule. And, if a system of universal training, applying to the young men under twenty years, is to be established, this might have afforded an opportunity for studying applicable educational methods.

Evidently, retrenchment is the chief reason for the order, though there has been an expressed disappointment at the working plan; experience would certainly have developed improved and more satisfactory methods. If the order is put into effect schools will sustain a financial loss which the Government should adjust. E. G. E.

OFFICIAL STANDARD FOR CAFFEINE SODIO-BENZOATE.

BY A. B. LYONS.

According to the U. S. P. IX caffeine sodio-benzoate when dried to constant weight at 80° C. contains not less than 46 percent nor more than 50 percent of anhydrous caffeine, the remainder being sodium benzoate ($NaC_7H_5O_2$). It is not easy to account for so wide a margin of variation as this in a product which calls for so little skill in its manufacture. It is understood that originally it was prepared by combining caffeine and sodium benzoate in equal proportions. Official caffeine is a crystallized product, not liable to contain impurities, but variable in the amount of water of crystallization it carries. The crystals contain nearly 8.5 percent of H_2O to begin with, but by exposure to dry air they lose a considerable proportion of this, so that under ordinary conditions they retain less than half the original quantity. By exposure to a moist atmosphere they recover the water they have lost unless they have been rendered quite anhydrous, in which condition they apparently refuse to take up more than about 3 percent of moisture, practically one-third of one molecule of H_2O.

Grant that caffeine may contain as much as 9 percent of H_2O, and that it may possibly be quite anhydrous, a mixture of this with an equal weight of pure dry sodium benzoate would contain after drying completely at 80° C. at least 47.69 percent, at most 50 percent, of anhydrous caffeine. An allowance of 0.5 percent for inaccuracies in weighing would make these figures, respectively, 47.45 and 50.25 percent.

The assumption that the remainder of the product is pure $NaO_7H_5O_2$ is not consistent with the "rubric" for official sodium benzoate, which is allowed to contain 1 percent of impurity as shown by alkalinity of the ash. Whether or not this impurity is non-volatile the test does not show, so that it is not possible to say exactly how the figures arrived at above will be affected, but it would appear that a range of 47 to 50 percent ought to cover the practical possibilities, making no assumption of expert knowledge on the part of the manufacturer.

But it is the manufacturer who is most competent to decide the question what standard is most just to all parties concerned. Money values of course come

into consideration where costly drugs are concerned, but only subject to the standards and requirements of the pharmacopoeia, where such exist. In the present instance, we have the clear statement that official caffeine has a molecular formula including nearly 8.5 percent of water of crystallization. It is this product and no other which he will use in making the double salt, just as it is sodium benzoate containing not less than 99 percent of $NaC_7H_5O_2$ that he will use as the second constituent of an ideal product.

In practice he will find probably that the caffeine has lost a portion of its water of crystallization, and it may be that the sodium benzoate contains some hygroscopic moisture, and so the quantities of each which he will take to make caffeine sodio-benzoate will be adjusted to the ideal standard and his product will assay for the U. S. P. method somewhere near 47.7 percent of anhydrous caffeine. Merck's product is stated to contain 47.9 percent. There is no reason why any great range of variation should be permitted, since the manufacturer can be trusted to make a correct adjustment in the quantities of caffeine and of sodium benzoate which he uses. In the case of official chemical salts and similar products it appears that variations of more than one-fourth of one percent are not considered excusable. It is certainly not more difficult to adjust the caffeine content of the double salt to a correspondingly narrow range, perhaps between 47.3 and 48.0 percent, and the range having been fixed, there should be no difficulty in keeping within such limits.

It will be noticed that this range is much narrower than that arrived at in the initial discussion above. The reason for the discrepancy is that in that discussion the possibility was admitted of presence in the sodium benzoate of a considerable quantity of hygroscopic moisture, whereas the manufacturer maintains the ideal of a salt which *without drying* is at least 99 percent pure. We can see no reason why his assumptions should not be adopted as a basis for the official requirements for this product.

THE EFFECT OF ALCOHOL ON PITUITARY EXTRACT.

BY HERBERT C. HAMILTON.

It not infrequently happens that when a salesman, detail man or other member of a firm of manufacturers of pharmaceutical products is confronted with the statement that a certain preparation fails to act in its accustomed manner, he points out a number of possible factors in attempting to find the cause in the particular case.

Pittenger presented a paper before the Scientific Section of the A. Ph. A. 1918 meeting (published in the October issue of the Journal) in which he notes one such instance where the well-known fact that alcohol precipitates the active constituent of pituitary extracts had been advanced as the possible explanation of a failure of this preparation to act on the uterus muscle.

The writer whose discussion of this paper on the floor is not given in the published proceedings corroborated the facts there presented and noted that the question had come up on more than one occasion and that laboratory experiments had in every case shown that alcohol in the quantity present could not affect the activity of this preparation unfavorably.

The subject seems important enough to be carried somewhat further in order to explain fully the conditions under which alcohol can affect the pituitary extract unfavorably.

The writer has observed that a commercial sample of pituitrin shows an opalescence from the action of strong alcohol but that a mixture of equal parts pituitrin and 95% alcohol shows no permanent opalescence and no precipitate. Diluted and injected into the circulation of an anesthetized dog in the usual method of testing there is no perceptible lowering of its activity. This is very much in excess of the possible alcohol content from washing the syringe or the site of injection.

A further experiment has been carried out on a highly active dry pituitary product. This material was ground in a mortar and rubbed thoroughly with 95% alcohol adding successive portions and filtering the alcohol to obtain a clear solution.

Three series of tests were made on the resulting products, namely, tests of the dry material after being washed with alcohol, tests of the residue remaining on recovery of the alcohol, first, an aqueous solution of this residue and second a hydro-alcoholic solution of the residue.

The results of these tests showed that 95% alcohol is not a solvent for the active principle nor has it any deleterious action; the active agent was no less active and the residue from evaporation of the alcohol had neither pressor nor oxytocic activity.

The only reaction between alcohol and pituitary extracts is when the former is present in great excess, in which case it acts as a precipitant.

RESEARCH LABORATORY OF PARKE DAVIS & CO.,
DETROIT, MICH.

THE DETERIORATION OF TINCTURE OF DIGITALIS.*

BY PAUL S. PITTENGER.

In a recent publication entitled "The Deterioration of 'U. S. P.' and 'Fat-Free' Tinctures of Digitalis," Pittenger and Mulford, Jr.,[1] gave the results of a series of experiments which were carried out with two objects in view:

First, to show that Tinctures of Digitalis deteriorate quite rapidly and

Second, to advance experimental data to disprove the statements made at several medical society meetings, that fat-free preparations deteriorate more rapidly than the regular U. S. P. tincture.

The results of physiologic assays made on each of 15 samples five and eight months, respectively, after the first test, were given to substantiate the author's claims that "Most tinctures of digitalis *do deteriorate*" and that "Fat-free tinctures of digitalis *do not deteriorate at a greater rate than the U. S. P. tincture.*"

Since publication of the above paper, Hamilton in a recent publication[2] takes exception to the results given because the fifteen samples tested showed an average

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* Read before Scientific Section, A. Ph. A., Chicago meeting, 1918.

[1] Pittenger and Mulford, Jr., JOURNAL AMERICAN PHARMACEUTICAL ASSOCIATION, March 1918, p. 236.

[2] Hamilton, "The Deterioration of Digitalis Extracts," JOURNAL AMERICAN PHARMACEUTICAL ASSOCIATION, May 1918, p. 433.

deterioration of 34.8 percent in 8 months which he states "would lead one to infer that the tincture is practically worthless." Exception was also taken to the fact that the regular tinctures made with 50 percent alcohol showed an average deterioration of 47.8 percent and that the Fat-free Tinctures made with 80 percent alcohol showed an average deterioration of 40.7 percent, while the Fat-free Tinctures made with 50 percent alcohol showed an average deterioration of only 22.8 percent. "From this" the author states "one might conclude that a tincture is of little value unless made by extracting fat-free leaves with 50 percent alcohol, since Fat-free Tincture with 80 percent alcohol is apparently no more stable than that with less alcohol."

It was not the intention of the authors to use the results given to show the *average* rate of deterioration of Tinctures of Digitalis or to claim, or infer that a tincture made with 80 percent alcohol was less stable than one made with 50 percent alcohol. In fact, several years ago when the menstruum for the U. S. P. Tincture was 50 percent the author carried out many tests on the comparative rate of deterioration of Tinctures of Digitalis made with menstruums of 50, 60, 70 and 80 percent of alcohol, respectively, and found that as a general rule the higher the percentage of alcohol employed the slower the rate of deterioration. On the basis of these experiments we raised the alcoholic content of our digitalis specialties to 80 percent several years before the U. S. P. increased the percentage of alcohol in the official tincture.

Unfortunately, in the set of experiments quoted, for some unknown reason the opposite condition of affairs prevailed.

I therefore thoroughly agree with Hamilton in that "It seems improbable that tinctures with low alcoholic content would be uniformly found more stable than when extracted with 80 percent alcohol, whether the drug was fat-free or not," also "that no data either good or bad should be accepted as representing the average condition of digitalis after any particular period of aging."

This latter point is clearly illustrated in the paper by Hamilton, referred to above, in which the results of a series of experiments by Houghton and Hamilton[1] on Tinctures of Digitalis made with *50 percent alcohol* are given with the following conclusion: "*That a maximum average loss of 10 percent a year can be expected in tinctures or fluidextracts of digitalis.*" On the same page are given the results of experiments carried out by Rowe on 6 Tinctures of Digitalis made with *70 percent alcohol* in which he found *an average loss on 6 samples of 21 percent in* $6^1/_2$ *months.*

Owing to the deterioration which occurs in digitalis preparations, we established, 4 or 5 years ago, a routine by which all tinctures of digitalis which are not sold within 3 months from date of manufacture are sent to the laboratory to be retested in order to determine whether or not the preparation has deteriorated. If it is still of standard activity it is given a new date of test. If deterioration is shown, however, it is taken from stock, fortified and restandardized.

The results of these tests are very interesting and show that the rate of deterioration of tincture of digitalis varies greatly with different lots. While the great majority of samples deteriorate, and some deteriorate very rapidly, there are quite a few samples which apparently do not deteriorate at all.

[1] Houghton and Hamilton, *Am. Jour. of Pharmacy*, Oct. 1909.

I have also noticed that in many cases preparations deteriorate rather rapidly during the first three months and then remain practically permanent thereafter.

The accompanying table shows some of the data on the deterioration of Tincture of Digitalis that we have obtained by the above method of routine testing.

DATA SHOWING DETERIORATION OF TINCTURE OF DIGITALIS.

1st Test.	Date.	2nd Test.	Date.	3rd Test.	Date.	4th Test.	Date.	No. of months between first and last test.	Deterioration.	Aver. Deter. per Mo. During 1st 3 or 4 Months.	Av. Deter. per Month After 1st 3 or 4 Months.
100%	9/11	85%	1/12	85%	6/12	85%	9/12	12	15%	3.7%	0
132%	9/11	127%	1/12	127%	6/12	127%	9/12	12	3%	0.7%	0
144%	9/11	125%	1/12	110%	6/12	110%	9/12	12	23%	3.2%	1.3%
133%	9/11	126%	1/12	115%	6/12	115%	9/12	12	1.3%	1.3%	0
125%	9/11	110%	1/12	110%	6/12	110%	9/12	12	12%	3.0%	0
100%	9/11	80%	1/12	75%	6/12	75%	9/12	12	25%	5.0%	6.6%
145%	9/11	145%	1/12	135%	6/12	135%	9/12	12	6.9%	0	0.8%
200%	9/11	153%	1/12	153%	6/12	153%	6/12	12	23%	5.7%	0
127%	11/11	80%	2/12	80%	6/12			8	37.9%	12%	0
100%	5/11	74%	6/12					13	26%	X	2.3%
130%	5/12	100%	8/12	71%	11/12			6	45%	7.9%	9.6%
100%	6/12	80%	9/12	75%	1/13	70%	4/13	10	30%	6.6%	1.4%
91%	1/13	65%	5/13					4	28%	7.0%	X
90%	3/13	62%	6/13					3	31%	10%	X
100%	11/12	83%	7/13					8	17%	4.2%	X
111%	3/13	111%	7/13					4	0	0	X
133%	11/12	133%	12/12	80%	7/13	71%	12/13	13	45%	0	3.7%
100%	10/12	100%	7/13					9	0	X	0
133%	12/12	71%	12/13					12	46%	X	3.8%
100%	11/12	67%	12/13					13	33%	X	2.5%
142%	11/12	125%	2/13	120%	5/13	115%	8-13	9	19%	3.6%	1.3%
111%	3/13	111%	7/13	111%	12/13			9	0	0	0
133%	10/13	100%	1/14					3	25%	8%	X
115%	9/13	83%	1/14					4	27%	7%	X
100%	8/13	100%	1/14					5	0	0	0
100%	1/14	83%	4/14					3	17%	5.6%	X
100%	2/14	85%	5/14	75%	8/14			6	25%	5%	3.3%
83%	2/14	83%	5/14	83%	8/14			6	0	0	0
144%	2/14	120%	5/14	110%	8/14	110%	11/14	9	23%	5.3	1.5%
83%	10/14	77%	1/15					3	7.2%	2.4%	X
108%	9/14	85%	1/15	62%	3/15			5	42%	7%	13%
108%	2/15	100%	5/15					3	7.4%	2.4%	X
110%	3/16	90%	9/16					6	18%	X	3%
118%	7/16	91%	11/16					4	22%	5.5%	X
125%	12/16	110%	3/17	100%	6/17			6	20%	4%	3%
125%	12/16	111%	7/17	100%	9/17			9	20%	1.7%	4.5%
100%	7/17	100%	9/17	100%	11/17	100%	1/18	6	0	0	0
135%	6/16	135%	9/16					3	0	0	X
125%	7/17	110%	2/18	110%	5/18			10	20%	1.7%	0
125%	11/17	110%	2/18	110%	5/18			6	20%	4%	0
166%	10/17	166%	12/17					2	0	0	0
125%	11/17	110%	2/18	100%	5/18			6	20%	4%	3%
110%	12/17	100%	3/18	85%	6/18			6	22%	3%	5%

The tabulated results show the average deterioration in 9 to 13 months of 43 samples to be 18.8 percent. The average deterioration of 38 samples during the first three or four months being 4 percent per month, while the average deterioration of 32 samples after the first three or four months was 2.4 percent per month.

PHARMACODYNAMIC LABORATORY,
H. K. MULFORD CO.,
July 28, 1918.

TABLETS FOR THE DISINFECTION OF DRINKING WATER.*

BY BERNARD FANTUS.[1]

For the disinfection of small quantities of drinking water, such as those that might be gathered and carried by rapidly moving troops, tablets constitute by far the most satisfactory form for use. Hence the study of these becomes of special importance in war time. To be ideal, such tablets should be small, prompt and reliable in action, perfectly harmless, and leave the water free from offensive odor or taste, and finally be relatively inexpensive. This study was undertaken to determine the nearest approach to the ideal.

Chlorine, by far the most potent disinfectant, is at the same time the most harmless, as in exercising its disinfecting action, it is changed to chloride ions. While liquefied chlorine is the most satisfactory form in which to use this agent for water disinfection on the large scale—the city of Chicago for instance, adding to its drinking water from three to five pounds of liquefied chlorine per million gallons of water—it is, of course, out of the question for the purpose under consideration.

Lime, in the form of chlorinated lime, is probably the most convenient and cheapest vehicle for chlorine; and this is, no doubt, the reason why the health department of the city of Chicago took up, in 1916, the question of preparation of chlorinated lime tablets. I am indebted to Dr. D. O. Tonney, the Director of the Municipal Laboratories, for permission to publish the data obtained by Mr. Jay Kaplan in this inquiry.

TABLET TRITURATES OF CHLORINATED LIME.

"The tablets were prepared as follows: Chlorinated lime containing not less than thirty percent of available chlorine is moistened slightly in a mortar to make a thick paste. It is important to add the smallest amount of water which will give a suitable consistency to the mixture. Very often the market product is sufficiently moist without further treatment. A tablet triturate mold of vulcanite, having fifty perforations, 5 mm. in diameter and 3.5 mm. in depth is used. The perforated half of the mold is placed on a glass plate and the paste is pressed into the impressions with a spatula. The mold is then placed for from five to ten minutes in an oven at 40° to 50° C. The tablets are now carefully forced out by fitting the two parts of the mold together and applying slow pressure. The tablet triturates thus prepared are shaken into bottles and tightly stoppered. The tablets ordinarily weigh from 120 mg. to 140 mg., and contain from 30 to 40 mg., of available chlorine. For distribution they are put up in homeopathic vials, ten tablets to the vial. The vials are tightly stoppered and kept, if possible, in a dark, cool place. Under average conditions, the disinfectant retains its potency for

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* Read before Scientific Section A. Ph. A., Chicago meeting, 1918. From the John McCormick Institute for Infectious Diseases. Aided by a grant from the Fenger Memorial Fund.

[1] Associate Professor of Therapeutics, Rush Medical College of Chicago.

about four weeks. The tablets are given out each summer by the Department of Health for the benefit of vacationists and motor tourists.

"*Directions for use:* Dissolve one tablet by crushing between the fingers in one quart of water in an ordinary mason jar, which should be sealed with an air-tight cap. The jar is then shaken and stored in a cool, dark place. This is the stock solution and under average conditions will last about one week, after which it should be renewed.

"To prepare water for drinking, take one teaspoonful of the stock solution to one 8-ounce glass of drinking water, allow it to stand for about five minutes, when it is ready for drinking and will be safe. If it is suspected that the water is heavily polluted, two teaspoonfuls of the stock solution should be used to each 8-ounce glass of water. If it is desired to make up a daily supply, ready for use, it can be done by adding four teaspoonfuls of the stock solution to each quart of water.

The following experimental notes were made by Mr. Jay Kaplan on the keeping qualities of these tablets:

On September 16, 1916, about two hundred chlorinated lime tablet triturates were made from a fresh can of chlorinated of lime and distilled water, to give the proper consistency, etc.

Filled about nineteen tubes containing ten tablets each and sealed by fusing the glass.

On September 18, 1916—analyzed one tube (sealed two days) by U. S. P. assay method: 4 tablets, weight 0.5706 Gm., required: 30.3 cc. N/10 $Na_2S_2O_3$ = 18.68% available chlorine.

Four months later, on January 15, 1917, another tube assayed 11.12% average, which represents a deterioration of about 40% Cl gas under pressure in tube. (Note: When opened tablets appeared to be moist and had lost their shape.)

Seven and one-half months later, on May 1, 1917, the contents of two tubes were assayed. Upon opening each tube under water, a loud report was heard and a distinct splash seen. No water was sucked into the tube. The gas was evidently under pressure. The tablets were moist and sticky, and did not retain their shape when removed from the tube.

Assay = 3.27% available chlorine in one tube
3.32% available chlorine in another tube
Average = 3.30% available chlorine, a deterioration of 82.5%.

We may therefore conclude that chlorinated lime tablets prepared by the tablet triturate process do not possess satisfactory keeping qualities.

COMPRESSED TABLETS OF CHLORINATED LIME.

On the assumption that the moisture employed in the preparation of the tablet triturates was responsible for the rapid deterioration of the tablets, just described, Mr. Eicher, of the School of Pharmacy of the University of Illinois, kindly prepared for me some tablets by means of compression, using the following formula:

Chlorinated lime, 30%, or proportionately
larger amounts of weaker lime ..... 0.59 Gm.
Sodium Chloride (granular) ..... 10.00 Gm.

Divide into 100 tablets weighing about 105 mg. each, avoiding use of lubricant.

One of these tablets will disinfect one l. of moderately infected water within one hour in cool, or much sooner in hot weather.

These tablets, prepared on May 3, 1918, without special care as to drying, and kept in the dark, in a well stoppered bottle, were assayed from time to time.

May 6, 1918 5 tablets weighing 0.538 Gm. yielded 9.2 mg. available Cl.
June 15, 1918 5 tablets weighing 0.544 Gm. yielded 8.1 mg. available Cl.
July 8, 1918 5 tablets weighing 0.529 Gm. yielded 7.1 mg. available Cl.
Aug. 9, 1918 5 tablets weighing 0.536 Gm. yielded 6.5 mg. available Cl.

This is equivalent to a deterioration of about 10 percent per month; though the rate of deterioration is becoming less. Had the tablets been prepared from dried material, the deterioration would, no doubt, have been slower. Nevertheless, it must be admitted that chlorinated lime tablets are decidedly unstable. However, by the time the deterioration has reached 50 percent, which might be in the course of half a year, these tablets would still be as good as ever for disinfecting half the specified quantity of water.

COMPRESSED TABLETS OF HALAZONE.

Because of this unstability of chlorinated lime tablets, H. D. Dakin and E. K. Dunham[1] advocated, for the purpose under discussion, *p*-sulphondichloramino-benzoic acid ($Cl_2NO_2SC_6H_4COOH$), and proposed the name "Halazone" for it. This substance is prepared from a cheap waste product in the manufacture of saccharin, which latter is ortho-sulphamino-benzoic acid. The para-isomer, which is not sweet, when chlorinated, constitutes halazone. This substance, very sparingly soluble in water, has its solubility increased by alkalies, such as sodium carbonate or borax. Dakin and Dunham found that 1 : 300,000 sterilizes water in about 30 minutes, leaving the water fairly palatable. They propose the following formula for tablets:

Halazone	4.0 Gm.
Sodium Carbonate (dried)	4.0 Gm.
Sodium Chloride	92.0 Gm.

The material should be carefully dried and mixed, the alkali being added last, and made into 100 mg. tablets, without use of lubricant.

One such tablet is capable of disinfecting one l. of water in 30 to 60 minutes.

The authors referred to report[2] that they found such tablets kept in amber-colored bottles at ordinary temperatures almost unchanged for five months, and that they should be serviceable for considerably more than a year. Having fed this substance to rabbits in doses of 100 to 200 mg. per day without observable symptoms, they consider it perfectly innocuous in the small amounts required for sterilization of water.

I have verified the claims of Dakin and Dunham in practically every respect. Have fed halazone to kittens and to rabbits in doses of 100 mg. per day for over 4 months without observable deleterious effect, either during life or on necropsy. This dose would approximate 7 Gm. daily for a man, and only 4 mg. are required to disinfect one l. of water.

Halazone tablets (which as well as the halazone used in my other experiments were kindly furnished me by The Abbott Laboratories of Chicago) showed the following results on assay from time to time.

Bottle opened May 6, 1918.
May 6, 5 tablets, weighing 0.550, yield 10.6 mg. available Cl.
July 8, 5 tablets, weighing 0.561, yield 10.6 mg. available Cl.
Aug. 9, 5 tablets, weighing 0.573, yield 10.6 mg. available Cl.

Therefore, there has been practically no deterioration in four months.

[1] *Brit. Med. Jour.*, Jan. 29, 1916, also May 26, 1917, p. 682.
[2] *Ibid.*, Dec. 15, 1917, p. 790.

The only disadvantage that halazone presents is its comparatively slow action. Using equivalent strengths of chlorinated lime and of halazone, (calculated on the basis of "active chlorine"), I found that halazone required almost twice as long as chlorinated lime for disinfection. This is in accordance with what might have been anticipated, in view of the fact that chlorine is the active agent in both, and that it is more readily given off from chlorinated lime than from halazone. The greater instability gives chlorinated lime a greater rapidity of action. However, even with chlorinated lime in the concentrations recommended, it may take 30 minutes to obtain complete disinfection. Now 30 minutes may seem quite a long time to a thirsty man.

COMBINATION WITH CITRIC ACID.

Some studies were therefore undertaken to find out whether it is possible to accelerate the action; and I succeeded in finding such an agent in citric or other organic acid. Citric acid enables a concentration of chlorinated lime or halazone to act within one to five minutes when, without the acid thirty or more minutes would have been required. As little as $^1/_{20}$ percent of citric acid enables chlorinated lime, $^1/_{20.000}$ N, to disinfect in less than five minutes; an equivalent amount of halazone, to act within ten minutes.

Another advantage of the action of citric acid in chlorine disinfection is improvement of the taste of the water thus disinfected. Nearly all of us are only too familiar with the disagreeable taste of chlorinated water. The addition of citric acid, even in very small amounts, improves the taste in two ways: it tends to disengage the chlorine from the compounds it has entered in with the constituents of the water, and it substitutes a pleasant degree of sourness for the flatness and offensiveness of taste of the chlorinated water. In this connection, I might point out that citric acid greatly improves the taste of Chicago water, which is not only chlorinated but which, at times, somehow becomes contaminated with the flavor of rotten fish. When used for this purpose, a little of a citric acid solution, say 5 or 10 percent, may be mixed with the water; the amount used being entirely governed by the taste.

Inasmuch as citric acid acts by driving off chlorine, it is obviously difficult to incorporate it in a tablet, at least one made in the ordinary way. In an experimental lot of citric acid-chlorinated lime tablets, made with fairly well dried material, all chlorine had practically disappeared within twenty-four hours. When, therefore, citric acid is used to accelerate the disinfectant action of chlorinated lime, or of halazone and to improve the taste of the product, it might be necessary to make use of a two-tablet system, unless some other acid and special method of preparation, which absolutely excludes moisture, make it possible to incorporate the two in one tablet. Here is a field for further research.

CONCLUSIONS.

1. Halazone is the best material at present available for the preparation of water disinfecting tablets.

2. Compressed tablets of chlorinated lime are less stable; though not so unstable as to be useless.

3. The tablet triturate process is not suitable for the preparation of chlorinated lime tablets.

4. Citric acid, even in very small amounts, renders the action of these tablets much more rapid and the disinfected water much more palatable; but seems unsuitable for incorporation in one tablet with the chlorine disinfectant.

DISCUSSION.

CHAIRMAN EDWARD KREMERS stated that the two-tablet idea in disinfection reminded him of an object of historical interest in the Historical Drug Store of the Wisconsin Historical Society, namely, a large container of tablets containing manganese dioxide and sodium chloride. When chlorine was to be generated, sulphuric acid was added to some of these tablets. The label on the container bears the name of Dr. E. R. Squibb, who devised this method, and was employed for the War needs of that period (about 1860).

F. E. STEWART: What microörganism was used in testing out the disinfecting power of these tablets?

BERNARD FANTUS: Typhoid organisms. We carried out the experiments not only in distilled water infected with typhoid organism, but also in tap water. The details of this part of the work will be published in the *Journal for Infectious Diseases*.

EDWARD S. THATCHER: May I ask Doctor Fantus whether he confined his attention to typhoid bacilli?

BERNARD FANTUS: When tap water was used there were other bacteria present. Hence, when the tap water was sterilized, a number of other organisms had also been destroyed.

L. F. KEBLER: As the important thing is to make the drinking water safe, it is necessary to avoid the use of too much of the disinfectants. I presume the taste would be the final deciding factor, but I have been wondering what would be the effect of too much of the disinfectants. An experience with too much copper sulphate for a like purpose came under my observation. This is a matter of importance.

H. C. HAMILTON: In my experience, I have found that it was more difficult to disinfect tap water than distilled water. The presence of chemicals cuts down the effect of the disinfectant.

Referring to the remarks of the last speaker, copper sulphate is effective for treating water containing vegetable growths, but not so efficient for killing bacteria.

BERNARD FANTUS: In the sterilization of tap water I found much greater variations than in the disinfection of infected distilled water. Some days it was more difficult to sterilize tap water than distilled water, on other days the reverse was true. This was due to the variations in the Chicago water supply.

F. E. STEWART: It is highly essential to ascertain how many bacteria are present in water, and whether a bacterial count was made to determine the number of the bacteria present in the drinking water.

BERNARD FANTUS: In the water disinfected in my experiments there were 30,000 to 90,000 bacteria per mil.

THE EVOLUTION OF CHEMICAL SYMBOLS.

BY INGO W. D. HACKH.

Evolution is progress, progress is the transition from the incomplete to the complete, an increase in value, either spiritual or material. The evolution of scientific knowledge illustrates best "how human knowledge grows" and progresses. To a student of any science its historical development will be of great benefit in understanding the ideas and conceptions involved. The development of chemical symbols, for example, offers a miniature history of chemistry and is an interesting topic in more than one respect.

In the dark epoch of the middle ages as the alchemists attempted to gain wealth and eternal life by the search for the philosopher's stone, man's position to the material world was entirely different. At that time man was still laboring

under the conception that by some secret formula he could change the natural laws governing the material world. He thought to impress his belief what "should be" upon matter and thus worked out an elaborate system of a philosophy of nature, intermingled and permeated with mystic and superstitious ideas. In all alchemistic writing one comes constantly across this intermingling of spiritual ideas and material conceptions. The symbols used to designate certain substances were allegoric and symbolic of spiritual ideas, like love and hate, male and female, light and darkness, etc. The masculine and feminine principles were imparted to the substance itself. Matter became animated and possessed life. There are many evidences that the experiments were conducted as a kind of sacred rite, accompanied by prayers and chastisements. It has been shown, *e. g.*, that the common abbreviation for *recipe*, ℞, was originally the sign for Jupiter, the supreme deity of the Romans, for before mixing the ingredients, it was necessary to pray first for the successful conclusion of the manipulation. Even the very name, "crucible," for the common laboratory utensil, indicates the fact that before the alchemists applied heat to their mixtures in their earthen vessels, they made the sign of the cross—Latin *crux* (gen. *crucis*) and prayed for success. Very often explosions and breakage occurred, and of the casualties we have no record. No wonder that the alchemists were held in fear, for they conducted strange operations with flames and noises, prayers and death.

To the mind of the alchemist, matter was thus animated, and according to the properties of matter, these were either masculine or feminine. Upon these conceptions the strange and mystic theories were constructed and embodied in symbols. The symbols differ greatly for one and the same substance, and the tracing is therefore extremely difficult. An old volume of 1783, which is said to be based upon a work of 1549 and a manuscript of 1300, gives a great number of these symbols, some of which are represented in Fig. 1. One can see the great diversity, which makes the tracing of the origin of these symbols very difficult.

The search for the philosopher's stone, or alkahest, was at its height during the fifteenth century, and as pointed out above, attained the dignity of a religion. In fact, many reputable bishops and fathers of the Roman Church were professed alchemists. This intimate association of alchemy with religion, of mysticism and theosophy, of chemical operations and rules for the conduct of life, is clearly shown by the writings of Raymond Lully (1235–1315), Albertus Magnus (1193–1282), Arnoldus Villanovus (1240–1313), Basil Valentine and others. Naturally their quest remained unsuccessful.

A new direction of thought was initiated by the founder of Iatro-Chemistry, Phillipus Aureolus Theophrastus Paracelsus Bombastus *von* Hohenheim, who lived from 1493 to 1541 and whose eventful life is most interesting and adventurous one. One writer says of him "he lived like a pig, looked like a drover, found his greatest enjoyment in the company of the most dissolute and lowest rabble, and throughout his glorious life was generally drunk;" another writer, however, describes him as "a man of noble character and intentions, a Christian humanist and ambulatory theosophist, who hoped to inspire mankind with a love of conscientiousness and veracity, and to restore the suffering to health."[1]

[1] Hendrick, "Everyman's Chemistry," 1917, p. 195.

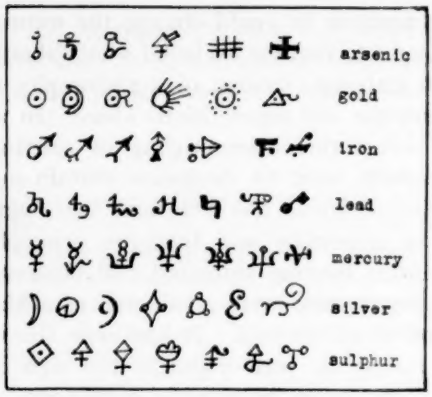

FIG. 1.—Alchemistic Symbols of the 15th and 16th Centuries.

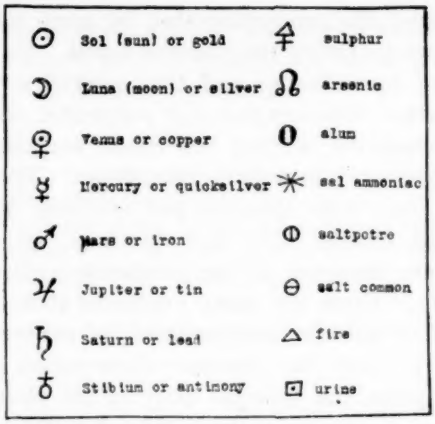

FIG. 2.—Alchemical Symbols of the 17th Century.

True it is that he violently attacked the physicians, adhering to the old traditional treatments, and the alchemists, who searched for the transmutation of metals. His doctrine was that the knowledge of alchemy should be applied to the healing of diseases. To this end he established his allegorical and pantheistic philosophy of harmonies, which centered around Soul-Mercury-Water-Nymphs, Spirit-Sulphur-Air Sylphs, and Body-Salt-Earth-Pigmies. As a physician he worked with various results, the fatalities were ignored and his successful treatments exploited by his followers. Slowly chemical knowledge was diverted to medicine and pharmacy.

In Fig. 2 the symbols of the Pharmacopoeia Batanea (1694), by William Salmon, a quack of the 17th Century, are reproduced. These symbols already show an emancipation from mystical allegories, for although the astronomical signs are preserved,

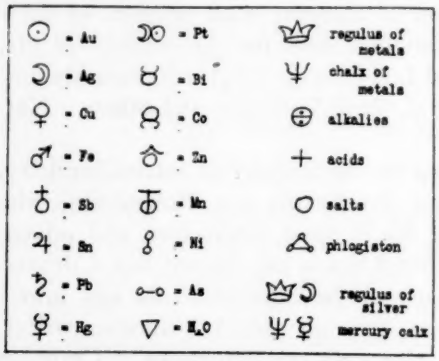

FIG. 3.—Symbols of Torbern Olof Bergmann (1735–1784).

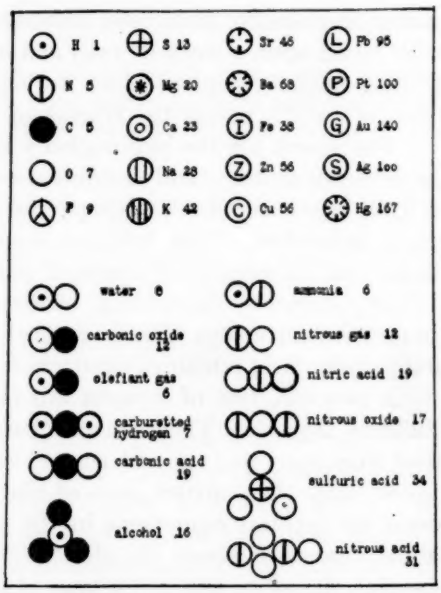

FIG. 4.—Symbols of Dalton (1766–1844) showing the old "relative weights" and terminology.

the symbols now denote the metals and substances and are used as abbreviations for them, *e. g.*, antimony is mentioned as stibium, and not as "earth."

Further development is seen in the symbols of Bergmann, Fig. 3, who published in 1783 his "*Opuscula physica et chimica.*" These symbols form a part of a very elaborate system by which chemical knowledge of that day was represented. They were in use at the time of the founding of modern chemisty, for Lavoisier and Berthellot used these and similar signs.

The chemical experience of mankind had now attained such a state when the atomic theory was in the air, for already Bergmann had observed the replacement of metals in solution, and Lavoisier tried to explain this by affinity. Richter and Fischer worked on acids and bases, on neutralization, and introduced the term stoichiometry, but it was for Dalton to lay the foundation of the atomic theory.

Dalton's symbols (see Fig. 4) appeared in 1808 in his "New System of Chemical Philosophy," and were the result of his studies on the composition of marsh-gas and ethylene and the oxides of nitrogen. Thus the cornerstone of modern chemistry was laid upon the fundament established by Lavoisier.

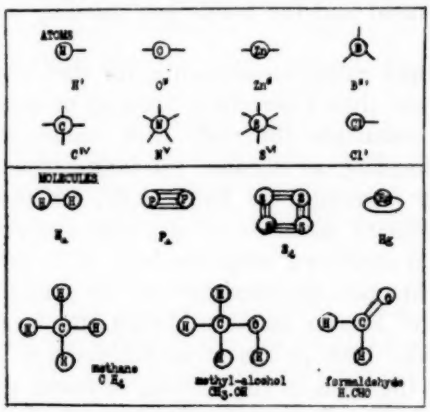

FIG. 5.—Graphic Notation of Kekule, Naquet, Frankland and others.

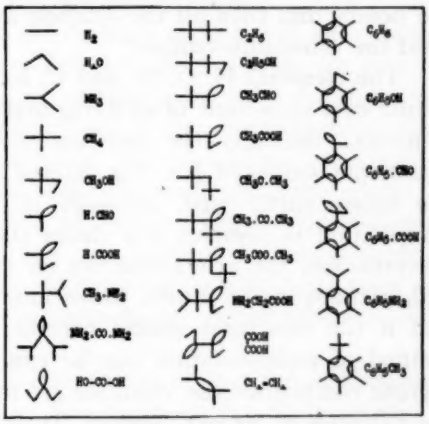

FIG. 6.—Some Simple Structure Symbols of Organic Compounds.

In 1814 Jöns Jakob Berzelius replaced the geometrical signs of Dalton by the initial letter or letters of the elements, and thus introduced the customary symbols of to-day. Chemistry advanced rapidly, and the work of Kekule, Liebig, Woehler, Dumas, Naquet and Frankland developed the graphic notation of Fig. 5 which developed into the structure formula. But before the chemical symbols became established as denoting a single atom and a definite atomic weight, they had to undergo during the period of establishing, the correct proportion of oxygen and hydrogen in water, the confusing use of the "barred notation," that is, in chemical formulas the old equivalents were designated by symbols, the new atomic weights by the symbols with a bar through them. This notation makes the reading of the literature of this time complicated and confusing.

A modern development of chemical symbols are the structure-symbols for organic compounds.[1] These structure-symbols are based upon the fact that the majority of organic compounds contain the elements hydrogen, oxygen, nitrogen and carbon. The respective valencies of these elements are one, two, three (or

[1] A Chemical shorthand, *Can. Chem. J.* 2, p. 135, 1918. Organic Symbols, *Science*, 48, p. 333, 1918.

five) and four, and differ therefore for each element. Upon this fact is based the system of structure symbols, and in Fig. 6 some of these symbols are given. It is evident that with this simple principle to each organic compound, a definite and different symbol can be given, for the atoms of the respective elements are thought to be points, and the points are determined by lines, thus where a line begins or ends an hydrogen atom is supposed to stand; where the line makes an angle or two lines come together, oxygen stands; where three lines meet or radiate, nitrogen exists, and at the point where two lines cross or four lines come together, an atom of carbon is thought to exist. While these symbols at first might seem to be complex, they make in reality the study of organic chemistry much simpler, for a little practice in deciphering and constructing these "valence-structures" will enable the student to form clearer images of the structure of a compound. They are the structure-skeletons; for any structure formula can then be taken, each atom has to be written down by its symbol, and the symbols connected by the bonds, and then all the symbols are erased and the bonds left standing will yield the "structure-symbol."

The elements H, O, N, and C, have been called bio-elements, for they constitute over 99 percent of all living matter, less than 1 percent is filled up by other elements. Similarly the elements which constitute the rocks and stones are mainly the oxides of Na, Mg, Al and Si, forming, as silicates, the larger part of the known earth crust, although of their structure we know little, for their composition is complex and defies the ordinary methods of structure-analysis. Nevertheless, the new researches on crystal structure, with the help of X-rays, will, perhaps in the future, throw more light upon the chemistry of the silicates, and if the structures should become better known and established, the same method of representation can be employed. Like in the structure symbols of organic compounds the valencies are made the basis in the system, so could also the valencies of Na —1, Mg —2, Al —3 and Si —4 be employed to form the basis of structure symbols for the rock-forming silicates, distinguishing them from the bio-elements, *e. g.*, by a circle.

The evolution of the chemical symbols is an interesting chapter of chemistry and illustrates the attempts of human mind to represent its conception of facts in a concise way, from the allegorical symbols of the alchemist, to the structure-symbols of to-day, which illustrate our present conception of organic structures.

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PROBLEMS OF THE MANUFACTURER OF MEDICINAL CHEMICALS DIRECTLY RESULTING FROM WAR CONDITIONS.*

BY B. L. MURRAY.

It may safely be said that all manufacturing enterprises in the United States have encountered problems directly resulting from war conditions. It is not possible that one industry, or indeed one individual, has remained isolated and unaffected by the war now four years old. We may not perceive in our casual observance of an industry, in just what manner war conditions have had their

* Read before Scientific Section A. Ph. A., Chicago meeting, 1918.

effect, but it is unthinkable that any can remain undisturbed when all the great nations of the world, and many of the lesser, are engaged in the most stupendous war of all time.

The steel industry, for example, has its problems. You have read of them. The largest and most highly organized steel industry in the world is at this minute straining every nerve to produce enough to meet war's demands. And it will meet them. The textile industry, highly organized for years, is to-day turning out quantities of its products hitherto unheard of, especially for the forces of ourselves and allies. And the textile industry will meet the situation as presented to it. The farming industry—probably the greatest in the world—has combed the country and the city in its search for workers, both men and women, to sow more acres and harvest more bushels than ever before in the history of farming. And it is harvesting those bushels this day. The ship-building industry—need anything at all be said of this industry? You are familiar with it. Every paper rings with its acclaim. In April 1917, no shipbuilding industry of note; to-day our ships seek the waters literally in fleets! Before hostilities broke out with our own country, we built almost no ships. Our commerce, broadly speaking, was done in ships of other nations. Great Britain, one of our most powerful allies, carried much of our shipping. Some was carried by our other allies, and a portion by Germany. Great inconvenience to our business world occurred when the German shipping was suddenly stopped. But we had the help of Great Britain and others to fill the gap. Thus shipbuilding and shipping had good support. And when we entered the war in 1917 our shipbuilding industry was promptly created by government capital. Our ships are launched in fleets! Only 24 days from the laying of the keel to the launching!

The chemical industry do you ask? No less wonderful than the shipbuilding! Relatively small foundation to build on, but has grown to gigantic proportions. The chemical industry is making good! It is not top-heavy. Not going to crumble soon. Held down by sober business men. Held up by American chemists, the best in the world to-day. Upheld, as are all our industries, by the *civilized* peoples of the world. You know what the Americal chemical industry is to-day: You can not fail to hear about it. We have chemicals to spare—and we are exporting them to those who want them. The chemical industry does not intend to quit when the war is over. Plans are not laid with that in view. Our new and highly developed chemical industry will stick, and no man or group of men will be able to pry it out of its honestly won position.

The chemical industry and the shipbuilding industry may be considered as in somewhat the same positions although there are differences. When war first confronted the world as an actuality in 1914, the United States, Great Britain, France, Italy, Japan, Russia, in fact the world itself, depended almost entirely on Germany for its chemicals. This is true of chemicals in general, but particularly true of medicinal chemicals, in which you are especially interested. The United States depended almost entirely on Germany for the medicinal chemicals! And Germany became an enemy country! American chemical manufacturers rose at once to the occasion. Factories sprung up like weeds, and others greatly expanded. Chemists became sought after, and soon, to the astonishment and satisfaction of all, we were producing in quantities previously undreamed of. The government

did not do this. Government aid has been more recent and mostly in munitions. Individual enterprise produced our great chemical industry.

It is indeed a great privilege to stand to-day so entirely independent. America is proud of her accomplished works, even though impelled to the performance of them by the greatest war of history. And the chemical industry is proud to stand side by side with the shipbuilding industry as one of the new and most remarkable results of the war.

One of the first problems with which manufacturers were confronted was shortage or lack of raw materials. Supplies of raw materials that had given no particular trouble in the past were suddenly shut off. For example, in peace times opium came mostly from Turkey. Its list price was about $4.50 per pound and manufacturers were familiar with its behavior in their laboratory processes. But Turkish opium suddenly became unobtainable and prices rose to $20.00 or even $30.00 per pound. Persian opium came into the market. It is somewhat different in its nature, so that processes of manufacture of opium preparations had to be revised. One interesting feature of this example is that from Persian opium plenty of codeine is obtainable, whereas less is yielded by Turkish.

Coca leaves came mostly from Java. Supplies became obtainable with difficulty because shipping was so limited. South American leaves again came into the market, necessitating in turn changes in the processes of manufacture of preparations from coca leaves, since the leaves from various sources are different in their make-up.

Cinchona affords another example of difficulties encountered with raw material. The Dutch owners of the East Indies, the principal source of cinchona, have placed its sale on a restricted basis by means of licenses. It was difficult and expensive enough to obtain supplies heretofore, owing in part to limitations of shipping, but it is more so now.

Pharmacy, happily, consumes relatively small amounts of potash, but has, nevertheless, suffered to a considerable extent from shortage of potassium salts. All potash came from Germany in the past, but many new sources have now been found. They are, as yet, too limited in their output to meet our national requirements fully, although the demands of pharmacy and medicines are being met reasonably well now. Because Germany had potash to sell she told us to use it. And because she told us to use it we did so. Its use was not really so necessary in pharmacy and medicine as we allowed ourselves to think. Physicians now tell us that in general the corresponding sodium salts are just as useful therapeutically, in fact in many cases are preferable. Of course they are cheaper, and for the two reasons, usefulness and cost, sodium salts should be employed wherever they can be. But we should also use them because by so doing we release an equivalent amount of potash for war purposes.

Manufacturers that were successful in obtaining their raw materials, even though with great effort, were even then by no means in smooth waters. Apparatus is constantly needed both for renewals of the present equipment and for manufacture of new articles. We were surprised to have the war bring to our attention the fact that much of the apparatus used in chemical manufacturing came from enemy countries. This was especially the case with glassware, porcelain ware and stoneware, but to a great extent also with enameled iron and other wares,

particularly acid-resisting wares. You will readily see what a great demand and burden was suddenly thrown upon our makers of glassware, porcelain ware, and stoneware. Many new and very extensive, as well as most urgent, demands were made upon them. And our foundry men too, producing the great pans, kettles, vacuum dryers and such, encountered orders for supplies entirely beyond their ability to supply promptly.

No doubt the experience of Merck & Co. in getting apparatus for renewals and for new work was similar to that of other manufacturers. It was simply necessary to wait for many of the pieces required. Thus plans for making new products were formed, methods of manufacture worked out, buildings erected, raw materials provided, outlets for the finished goods arranged, and all were then held up for an indefinite period while waiting in line for turn at the factory of the apparatus maker. These almost interminable waits for apparatus were exasperating, to say the least. It is very much like being all dressed up and nowhere to go. Weeks elapsed, then months. An important piece of machinery ordered in November not yet obtainable in August!

But there were good and sufficient reasons for all this waiting. New industries, those of the apparatus makers, were being born or recreated in the United States. They are now with us strong and sturdy. Long may they live!

Given the raw materials and apparatus, men and women, skilled and unskilled, are required. The labor question arises. Long before our country entered the war there was such a demand for labor that employers were alarmed. The allies were making such great demands on us for food, munitions, clothing and supplies in general that our laborers were in unusual demand. It was difficult to find a man to stick to any task for more than a brief period of time. There was much shifting about from one employer to another, thus creating great uncertainty in factory production.

With the calling of the United States Army the difficulties, of course, greatly intensified. Factories sent their best men with willingness and eagerness to the army and navy, displaying with proper pride the service flag of our country. But the problem of renewing the forces of chemical labor had none the less to be met. The problem has been met, and is being met daily, but it is one of the real problems of chemical manufacturers. Chemists, engineers, mechanics and skilled help in general were properly included in the draft. Many volunteered, others were drafted, so that from day to day the manufacturer's personnel was apt to change. So much uncertainty arose as a result of this that production was seriously threatened. Finally, however, the government came to our assistance. To-day unskilled labor is employed through government agencies; and chemists for important work in essential industries are returned from the ranks of the army to the ranks of the industries.

Chemicals, even medicinal chemicals, produced from suitable raw materials, in proper apparatus, by conscientious labor, are of small value unless containers in which to sell them are available. And the problem of containers has been a trying one. Bottles are very difficult to obtain and supplies must be arranged for well in advance, even several months in advance of requirements. Tin cans became very uncertain, because the war's requirements on tin must of necessity be met before any other. Cartons, carboys, barrels, boxes, and in general all

containers demand special consideration. And, in addition, much larger quantities of them are needed; to such an unusual extent have demands for the products of our own country increased.

How ship your products to your customers? Not by freight; not by express; for both these are greatly congested and positive embargoes abound. The mails are useful for small shipments, autos for short haul shipments only. It became necessary to employ a representative, who could be in Washington or elsewhere as needed, for the purpose of demonstrating to those in authority over questions of shipping, that medicines, and, especially medicinal chemicals, should have preferential treatment. The *sick* are waiting! Delays in shipping such material as medicines should not be allowed, much less required! Orders giving your products priority over other less essential shipments had to be earnestly sought. Such priority orders became obtainable but only after due effort. It developed into a real burden, however, when such special efforts were necessary in order to obtain each shipment of your raw material, your coal and your containers; and in addition to send out each shipment of your finished products. Lately this matter has been greatly cleared up and medical and surgical supplies, as well as the essentials for their production, are given proper priority. It has been a great relief.

Just at the moment when many of the troubles above related had, by dint of strenuous and concerted efforts, been overcome, or had at least been put in temporary abeyance, the telephone brought the startling news to Merck & Co. that "at five o'clock *to-day* the electricity for your motors and machinery will be shut off until further notice." It was the voice of the Public Service Corporation that spoke. Of course, they could not furnish current, because the ice was so thick that the coal barges could not get up the river to their power house. And besides there was no coal to come up the river. Priority orders for coal had failed to materialize for the Corporation that lights our houses and our streets, that propels our street cars and that turns our motors. Twenty minutes' notice to give up electricity! And our works running night and day!

I would not have you think that there is in all of this any tendency to find fault or to complain. Such is not the case. The situations as they arise singly and collectively in the American chemical industry are new, and they have to be met. They are being met! And met successfully! And it is in this success that we find pleasure in striving. And pride in our accomplishments. Let the government commandeer all the acetone in the country. We'll make our chloroform from something else. Let them send their questionnaires. Let them have our ammonia and our acetic acid, and anything they need. The chemical industry of America is working for and with the government, not in spite of it. They ask for a million cans of ether to be ready in a few days! They want thirty-eight million pills! There is an urgent call for five hundred thousand bottles of carbolic acid. All together with a will and the demands shall be cheerfully met. For does not every American here with red blood in him know that every such deed *accomplished* helps to defeat the hated enemies of our country in their desperate efforts to impose their ghastly Kultur on America, even as they have already imposed it upon Belgium!

PROBLEMS OF THE MANUFACTURING PHARMACIST DIRECTLY RESULTING FROM WAR CONDITIONS.*

BY C. H. BRIGGS.

Manufacturing pharmacists, like all other manufacturers, have encountered some serious problems resulting from the War. Some of these problems have been solved but others are becoming more serious. The encouraging part of it all lies in the fact that we are facing these problems squarely and doing things now that we would have thought impossible before the war.

One of the most serious problems which confronts us at the present time is the shortage of chemists and pharmacists and the loss of our trained and skilled men. This is becoming very acute, and as the war goes on, it will become more and more serious. Skilled chemists and pharmacists are indispensable for the proper manufacture of pharmaceutical products. They are necessary for manufacturing, for assaying and control work, and for research. The Government has generously provided for exemptions for chemists to control products being made for the Army and Navy. But experience shows that even men so exempted frequently believe that they are not doing their full duty to the Government and later enlist for war work. This is particularly true with research chemists, and research work is necessarily much reduced at present.

In the past there have been a large number of chemists and pharmacists graduated every year from our many universities and colleges. This source has supplied our increasing demand for such men, but under present conditions comparatively few men are being graduated as chemists and pharmacists, and even these are wanted for war work as soon as they are ready. We are really facing a serious shortage in chemists and pharmacists and both men and women should be urged to take these courses and carry them to completion, as they will be greatly needed in the future.

A second problem that confronts us is the increase in the cost of the various products that we manufacture. I do not recall a single item that can be made for anywhere near the same cost it was made for before the war and many products cost several times as much. This is due of course to several causes:

1st. Increase in cost of crude drugs, chemicals and raw materials due to the scarcity of these products.

2nd. Increase in cost of labor.

3rd. War taxes, for these must necessarily be added on to the cost of manufactured products if the manufacturer wishes to continue in business.

If to the total of these costs is added a fair profit for the manufacturer and then the increased freight and express charges, is it any wonder that the druggist is surprised at the cost of his goods, or that the consumer thinks he is being robbed when the druggist has added on his cost and profit? But these are war times and we are coming to expect higher prices on everything we buy and we are never disappointed.

A third problem that has been acute ever since the war started is the shortage of certain drugs and chemicals. Drugs which are produced only in Germany, Austria and Turkey are now practically out of the market, while drugs which were

* Read before Scientific Section A. Ph. A., Chicago meeting, 1918.

produced in Russia, France and Italy are obtainable in limited quantities. In fact crude drugs from all foreign sources are scarce and high priced. Some crude drugs which are unobtainable from usual sources are being supplanted by similar drugs from other sources—as for example in place of Russian Ergot, Levant Scammony and Turkish Gum Opium, we are now able to obtain Spanish Ergot, Mexican Scammony and Persian Opium. Genuine Liquid Styrax is practically out of the market, but a similar gum from South America is quite plentiful and is being used with satisfactory results.

There is a real shortage of some of the rare alkaloids. Arecoline Hydrobromide, Physostigmine Salicylate and Scopolamine are unobtainable. Sparteine Sulphate and Pilocarpine are very scarce. Atropine is being produced in this country and is becoming more plentiful. Other alkaloids are all very high in price.

The shortage in pharmaceutical chemicals is improving steadily and thanks must be extended to American manufacturers for their earnest efforts to make these chemicals. At times important chemicals have been practically unobtainable, as for example—barium peroxide, benzoic acid, resorcin and cinnamic acid, but American chemical manufacturers are now making a good quality of these chemicals in sufficient quantities to supply the demand. Prices, however, are still high. Cinnamic acid, for example, was plentiful before the war at $1.00 per lb. Not long ago it sold at nearly $20.00 per lb., but can now be obtained at $10.00 per pound.

Potassium salts have necessarily been scarce and much in demand ever since the war started, as Germany was the principal source of their supply. Limited quantities are now being produced in this country, but hardly sufficient to supply the demand. The U. S. P. IX has provided alternate formulas for certain preparations such as Blaud's Pills, Compound Solution of Cresol, etc., so that sodium salts may be used where potassium salts were formerly employed. These formulas work satisfactorily and products so made give the same therapeutic results.

Another problem which is rapidly becoming very important is the conservation of glycerin, sugar and alcohol. In the past manufacturing pharmacists have used these items freely with only the thought in mind of producing the best and most stable pharmaceutical preparations possible. But with the increasing demand for glycerin for war purposes, the present shortage of sugar and the high cost of alcohol, manufacturers have been curtailing the use of these items wherever possible. In some products, where glycerin has been used freely, it has been entirely eliminated and replaced with the equivalent amounts of sugar. In others, where the glycerin was necessary for preservative purposes, some preservative has been added. Glycerin, alcohol and sugar are very important in most preparations for their preservative properties and for their action as solvents, and it would be false economy indeed for manufacturers to so restrict their use that the preparations would eventually ferment or spoil with a total loss of all the ingredients. There has been some consideration of placing government restrictions on the use of glycerin and sugar in pharmaceutical preparations, but such restrictions would be apt to lead to much greater losses in the spoiling of finished products, and it is to be hoped that such restrictions will not be imposed until they are found to be absolutely necessary. When we need drugs and medicines,

we want the best, and we can better afford to curtail on candy, sodas, etc., than on drugs and medicines.

In some of the U. S. P. preparations the use of glycerin could be readily eliminated, as, for example, Fluidextract Cascara Aromatic, which contains 20 percent of glycerin, and Syrup of Hypophosphites. The fluid glycerates might well be dispensed with until after the war, and fluidextracts used instead. Such changes would be of real value and help to reduce the consumption of glycerin materially.

As a final problem, I might mention the difficulties in transportation both in obtaining supplies and in shipping finished products. Delays of this kind are very annoying, both to the manufacturer and to the consumer, but we must expect such delays and so regulate our affairs as to produce as little inconvenience as possible.

In conclusion, then, we would ask for all the help you can give in increasing the number of graduates in chemistry and pharmacy, in regulating your selling prices to conform to the present cost of goods, in avoiding unwise restrictions on the use of sugar and glycerin and alcohol in pharmaceutical products which are liable to spoil, and in allowing for delays in transportation in ordering your supplies.

ANALYTICAL AND CHEMICAL RESEARCH DEPARTMENT,
PARKE, DAVIS & CO.,
DETROIT, MICH.
July 31, 1918.

THE CONSERVATION OF CRUDE DRUGS.*

BY HUGO H. SCHAEFER.

Much has been said and written of late regarding the conservation of glycerin, alcohol, syrup, etc., products which are used as solvents for drugs and their active principles, but practically nothing has been said about the conservation of the crude drugs themselves. To-day there is a shortage of very many botanicals, some are practically unobtainable, others are scarce, and all have increased more or less in price. These conditions are due partly to the shortage of help restricting the collection, partly to the enormous quantities bought by our and the allied governments, but largely because Europe is the habitat or source of supply of a great many of our official drugs. Much, of course, has been done to overcome this shortage by encouraging both the collection of native drugs as well as the cultivation of drugs which up to the present time were chiefly imported from Europe. Nevertheless, any means which might conserve the supply at hand ought to receive attention.

It has come to the author's attention that drugs often contain a much higher percentage of active constituents than the U. S. P. requires. Many official drugs will contain only slightly more than the requirements call for, but some may be obtained on the market which contain entirely too much active constituent. Jalap, for instance, has been found to contain as much as 15 percent resin instead of the 7 percent required, ipecac with 3 percent soluble alkaloids instead of

* Read before Section on Commercial Interests, A. Ph. A., Chicago meeting, 1918.

1.25 percent, cultivated belladonna, stramonium and hyoscyamus are often found to contain more than double the required percentage of alkaloids.

What happens when such drugs are dispensed? If the drug is assayed it will probably be sold per unit of active constituent for manufacturing purposes. But suppose the manufacturers cannot absorb all of this high quality drug or suppose it is sold to the retailer without assay, naturally the drug or its preparation, when dispensed, will be considerably over strength and the patient will receive an overdose of the drug. This overdose may or may not be harmful, but in either case the excess of drug is lost—is wasted. How much is wasted in this way is hard to estimate, but of 100 assays of various U. S. P. drugs made by the author during the last few months the average drug was found to be 23 percent higher in active constituent than is required, showing that 23 percent of these drugs would be wasted if dispensed by the druggist in any form without first being assayed and adjusted by some means.

How could this be overcome? The U. S. P. in its directions for making tinctures for which assays are given, directs that after an assay has been made the volume of the unfinished tincture should be so adjusted that the finished product will contain a certain quantity of active ingredient. In other words, if a druggist desires to make tincture of hyoscyamus he must purchase an assayed drug containing not less than 0.065 percent alkaloids and after the tincture has been made he must assay it and adjust it so that the finished tincture contains not less than 0.0055 Gm. and not more than 0.0075 Gm. alkaloids in 100 mils. How many pharmacists are in a position to do this? And yet if it is not done the preparation may be too strong, the patient may receive an overdose and the excess of drug may be wasted. Would it not be much better to adjust the strength of the powdered drug? Would it not be more practicable to allow the wholesale druggist or the crude drug merchant, after assaying a drug and finding it above strength, to adjust it by diluting it down with some inert material? Then all assayed drugs of the Pharmacopoeia would be uniform and the overdosage and waste would be eliminated. A pharmacist could buy such a standardized drug from a reputable house and after making his tincture carefully, would be sure that the percentage of active ingredient in the finished preparation would fall within the limits required by the U. S. P. Such tinctures would then truly represent a 10 percent preparation of a standardized drug and one mil of a fluidextract would correspond to 1 gramme of the drug and so with all other official preparations.

Of course, immediately the argument might be brought forth that if such dilution of powdered drugs were allowed, it would simply afford another means for the unscrupulous dealer to market inferior products, but upon further consideration it may be readily seen that diluting drugs with inert material is no different from mixing high grade drugs with low grade in order to obtain a product of exact U. S. P. strength and such mixing is no doubt done every day and is considered legitimate. Or again, it is no different from diluting a fluidextract made from a high grade drug with additional alcohol or menstruum to bring it down to the proper strength as the U. S. P. directs.

No doubt many firms have been in the habit of diluting powdered high grade drugs with extracted drugs or other material, but it is the object of the author in writing this paper to bring about a discussion which may help towards making

this, at present questionable procedure, legal. In the opinion of the author more uniform drugs and preparations could be obtained; overdosage could be prevented, large quantities of drugs could be conserved and incidentally money could be saved. The druggist could make his preparations without being required to assay them and to adjust them, if the diluting of assayed drugs with some inert material were officially sanctioned.

DISCUSSION.

C. O. EWING: This is a question upon which I cannot speak officially and my remarks must be so accepted. It is true, that there are some points in favor of such a procedure; one point mentioned was that it would enable the average pharmacists to make preparations which would not require standardization, if otherwise properly prepared. This might be so, if great care was invariably exercised, but we must admit that there are in the profession some people who cannot be made to be careful at all times, and I am of the opinion that there is no fool-proof method of securing an absolute uniformity of standardization. I think in the preparation of U. S. P. products of which standardization is required it should be done.

C. H. LAWALL: It seems to me that a solution of this problem, as to whether or not it is proper, may be found in the statement made in the Preface to the Pharmacopoeia, which is for the guidance of the manufacturer and the retail druggist who choose to take advantage of it, to the effect that when a product conforms in character to the standards of the products made by the official method, it may be made by any other method. The official procedure need not be followed provided the end products conform to the official requirements.

A. R. L. DOHME: I want to point out one thing that occurs to me in connection with this paper. Everybody who has percolated drugs to any extent knows that, given a drug of a certain alkaloidal percentage for percolation it is practically impossible to secure by any percolation method known an absolutely correct product containing all the contents of that drug. Standardized drugs have their undoubted advantages in many ways, but the uncertainty of a percolation securing all the alkaloid or active principle makes the preparations of them to that extent uncertain.

C. O. EWING: It occurs to me, regardless of how we prepare the finished product, the scientific way is to standardize that. The standards for crude drugs in the Pharmacopoeia are purposely much lower than we can ordinarily expect, because if they were placed too high a large quantity of the drugs would be of so low a standard that they could not be used. The scientific way is to standardize the end product.

J. P. SNYDER: I have read the statement that Professor LaWall refers to, but I think that has reference to the manufactured preparation and not to the crude material.

J. M. FRANCIS: I think the gentleman has overlooked one of the most important features connected with drug conservation. He perhaps refrained from referring to this phase of the matter purposely, but it seems to me that, under the present conditions, one of the most important things before this Association is using its influence in some measure for bringing about certain changes in the specific use of such drugs as belladonna, digitalis, and perhaps others. That digitalis leaves should be gathered from plants of the second year's growth was changed in the U. S. P. IX, and I think the former provision was needless and wholly unnecessary, provided the drug is properly handled and cured and stored. I have seen belladonna grown in the United States better than was ever imported from Europe. It assays in many instances three times the standard required by the Pharmacopoeia. The Pharmacopoeia specifies belladonna leaves containing not more than 20 percent of stems. I have seen belladonna stems with alkaloidal content far above the standard. Why then force the belladonna growers of this country, the drug buyers or the drug manufacturers, to discard such a large portion of this available plant? The same applies to other drugs.

C. H. LAWALL: I can see no reason why such stems should be discarded.

C. O. EWING: I understand there is some demand in the trade for belladonna stems at the present time; but I may say that, recently, belladonna stems have been released by the Department.

H. V. ARNY: I make a motion that this paper be brought to the attention of the U. S. P. Revision Committee.

J. M. FRANCIS: I am sorry the gentlemen have failed to get the drift of my remarks. It comes back to the matter of economy and conservation after all. The suggestion as to the use of the stems of belladonna is exactly in line with the idea of using corn for feeding chickens instead of feeding it to human beings. Valuable grain should not be used for stock food when it is needed for feeding people. The alkaloids are present in the belladonna stems and the stems should be used in the best possible way, and I maintain that the idea of conservation would require that they should be used in the same way as the leaves are. What I have said does not apply to the importation of the drug from abroad. I am talking about the conservation of the drug grown in this country.

C. O. EWING: I think the provisions of the Pharmacopoeia cover this question, if the end product is of standard strength.

CHAIRMAN R. P. FISCHELIS: I make this suggestion; that instead of referring the paper to the Revision Committee it be referred to the Committee on Conservation that is to be appointed. We have asked the Council to appoint a Conservation Committee, and through this Committee it will also reach the Revision Committee.

H. V. ARNY: Then I make the motion that Dr. Schaefer's paper be referred to the Committee on Conservation.

A. R. L. DOHME: The Committee on Standards of the American Drug Manufacturers' Association has made a definite recommendation to the Revision Committee that in the interests of the conservation of belladonna the official requirements of belladonna, instead of being confined to the leaves with a certain amount of stems, include the whole plant. This, I think, should apply to henbane and other drugs as well as belladonna.

C. O. EWING: Right now I am thinking of a drug that should be included—ipecacuanha and ipecacuanha stems. The U. S. P. VIII specifies that the stems can be of certain length—I don't recollect the exact figure—and the present Pharmacopoeia specifies 5 percent of stems. Within the past year quite a number of samples of ipecacuanha and ipecacuanha stems have been assayed in the Department, and in a number of instances we found that the stems contained more alkaloid than the root itself. It is waste not to use a valuable product.

A. R. L. DOHME: Nearly fifteen years ago I presented a paper before the Scientific Section of this Association in which I proved that the stems of ipecacuanha were richer in alkaloid than the root, and, at that time, I recommended to the Revision Committee the inclusion of the stems of ipecacuanha as well as the root. In that same paper I brought out the point that the Carthagena ipecacuanha was even more rich in alkaloids than the Rio, which was the only one officially recognized, and the Revision Committee, in its wisdom, adopted the idea of making the Carthagena official as well as the Rio. I contend that the stems should be made official as well as the root.

C. O. EWING: There is no question at all but that we have the finest pharmacopoeia extant, but there is still room for improvement. It needs some revision and it is needed now. I do not think that we should wait as long as we ordinarily do for the next revision.

C. H. LAWALL: We are working on the Supplement now, which we hope to have ready at the time of the next Convention. If any of you gentlemen have any specific recommendation please send them in to the Revision Committee as soon as possible.

The motion to refer the paper under discussion to the Conservation Committee was adopted, and also a motion by A. R. L. Dohme requesting the U. S. P. Revision Committee, if possible, to issue the Supplement, covering important items, during this year. Other subjects of conservation, not closely related to the paper, were presented; these will be reported in the minutes of the Section.—EDITOR.

THE ADVANCE BY KILOMETERS.*

BY H. V. ARNY.

Recently a friend of the writer, requested to subscribe to a war-fund in the guise of "a mile of dimes," responded as follows:

While I heartily approve of your fund, I disapproved with equal heartiness of the way in which the money is raised. To an ardent metricist like myself the

* Read before Section on Commercial Interests, A. Ph. A., Chicago meeting, 1918.

securing of miles, yards and feet of dimes is objectionable. I find a dime measures 18 millimeters across and I therefore take pleasure in subscribing to 900 millimeters of dimes and enclose my check for $5.00 covering this length.

The above problem affords a peculiarly pertinent comparison between metric and our Elizabethan Standards. The measuring of a dime with calipers shows its diameter as exactly 18 millimeters, or about $^{23}/_{32}$ of an inch. Neither figure is a convenient one for calculations and yet despite this handicap note how much simpler is the metric arithmetic than is the figuring by the old standard.

Mentally we can calculate:

18 mm.	=	10 cents
90 mm.	=	50 cents
900 mm.	=	$ 5.00
9 meters	=	$ 50.00
9 kilometers	=	$50,000.00

And one kilometer (or one-ninth) represents the repeating decimal $\$5.555.55^{5}/_{9}$

Now for "the mile of dimes."

Mentally we may calculate:

$$^{23}/_{32} \text{ inch} = 10 \text{ cents}$$

$$23 \text{ inches} = \$3.20$$

$$12 \text{ inches} = \frac{12}{23} \times \$3.20$$

and there our mental arithmetic stops and we have to turn to multiplication and to long division:

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3.20
  12
------
23)3840(1.67
  23
------
 154
 138
------
 160
 161
------
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to find that one foot of silver dimes equals $1.67 which the promoters of the scheme call $1.70 to 17 dimes. Having gotten one foot, let us take paper and pencil and calculate the mile of dimes. An easy job for a summer siesta; merely multiplying $1.67 by 5280:

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 5280
$1.67
------
 36960
31680
 5280
------
$8817.60
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Thus, through much tribulation, we arrive at the fact that an English mile of American dimes will total $8,817.60.

As I understand the request of the chairman of this Section, his desire was a paper on how the metric system was capable of winning the war. In one sense the war is being won by the metric system, for thank God! the news now coming to us shows that our brave boys and the boys of our allies are winning the war, kilometer by kilometer. To this it might be added that the winning of the war by the allies would have been an easier task had all of us, English and Americans, as well as French, Belgians and Italians, spoken the universal language of weights and measures, the metric system. This is shown by the request of the French authorities just after we entered the war that we pitch in and manufacture the 75 millimeter gun rather than continue with the regulation United States gun of somewhat similar calibre.

But my intention is not so much to discuss what the metric system is doing to win the war for us Americans, as what the war will do toward making this a metric country.

There is not one of our group of ardent metricists who is advising the arbitrary changing of standard in this period of storm and stress. That the operations in France will bring about a trend toward metric units, especially in the machinery trade, is apparent, as for instance the adoption of the 75 millimeter gun. In fact only a month since a gentleman manufacturing taps and dies—a line that constitutes an anti-metric stock argument by the way—told the writer that over half of the screws and nuts that he is now turning out are on a metric basis. That the millions of our boys and our war workers will come back from France thoroughly familiar with metrics, and therefore metric advocates, goes without saying. And the advance of the Allies by kilometers, as read in our daily press, will gradually educate our general public to understand that meters, liters and grammes are not the fantastic creations of cob-webby brains, that anti-metricists would have us believe.

In conclusion, a word on scrapping. The best "scrappers" of all, the anti-metric protagonists hold before the eyes of their supporters, notably in the machinery trade, the awful consequences, the financial ruin, that awaits them, should the metric system become generally used in this country, by reason of consigning valuable machinery to the scrap heap.

The argument is as foolish as are most half-truths. It is about as reasonable as to argue that it is good business to continue to use a soda fountain of the vintage of 1890 instead of buying a modern sanitary apparatus because forsooth the scrapping of the antique "fizz squirter" will mean the loss of a few hundred dollars.

It is on a par with the short-sighted policy of most American coke oven operators prior to the war in refusing to scrap their archaic "beehive" plants and as a result we all know that the beginning of 1915 found us confronted by a coal-tar famine.

The "beehive" ovens were scrapped that year and were replaced by "recovery" ovens at great expense, but that expense has been paid several times over since then by the increased profits accruing from the saving effected by recovery-oven operation.

A final instance of scrapping that may be cited is one affecting the tire indus-

try. A year or so ago, the writer discussed with a scientific friend connected with a great rubber corporation, the campaign of education carried on by the American Metric Association and found a sympathetic listener, so sympathetic that the gentleman in question took up the matter with the executives of his company. Later he reported that the officials hesitated about taking a stand favoring the metric system as a change from old standards to metric ones would mean thousands of dollars of molds consigned to the scrap heap. Again we were confronted by the scrapping bugaboo.

It was therefore with surprise and interest that the following news telegram was noted in the daily papers:

> Washington June 28. Immediate reduction in the number of types and sizes of automobile tires from 287 to 32 has been determined upon by automobile tire manufacturers in accord with recommendations of the Conservation Division of the War Industries Board. Under the program announced to-day, by Nov. 1, 1920, all but nine types and sizes will have been discontinued.

Here is a case of wholesale scrapping in the service of efficiency and economy engaged in by the same business men who a year since disapproved of scrapping tire molds. As in this case, the adoption of the metric system will mean some scrapping, but it will mean scrapping in the service of efficiency, and economy and in the conservation of time; the most important asset that we possess in these stirring days.

POWDERED IPECAC.

Should It Be Recognized in the Pharmacopoeia.*

BY WILLIAM W. DAVIES.[1]

The Government has been in the market for supplies of Powdered Ipecac and recent assays made at the Chemical Laboratory of the Medical Supply Depot, U. S. Army, New York, N. Y., have invariably been of high test drug. As a result of this, it occurred to the writer that a standard, giving the maximum percent of ether-soluble alkaloids which should be found in Powdered Ipecac, would not only help to conserve the supply of this drug but also would insure a greater uniformity in dosage and in the products compounded with it.

The U. S. P. IX, which gives a minimum requirement of 1.75% ether-soluble alkaloids for the "whole drug," but sets no maximum limit, does not recognize Powdered Ipecac.

Samples of the "powder" tested here have assayed as high as 2.45% alkaloids, or 40% stronger than the minimum requirement of the U. S. P. IX for the "whole," namely, 1.75% alkaloids.

In Circular No. 6, issued August 1918, the War Department asked for bids on 500 pounds of Powdered Ipecac. If this should have been furnished with 2.45% of alkaloids it would be equivalent to 700 pounds of the drug testing 1.75%, in other words there would be 200 pounds of Ipecac taken out of the market unneces-

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* Authority granted to publish this article by the Board of Publication of the Surgeon General's office, U. S. Army, October 25, 1918.

[1] Sergeant, Medical Department, U. S. Army.

sarily and needlessly, permitting $850.00 worth of Ipecac to be wasted as well, unless it is diluted to the minimum standard before using or the equivalent taken.

Again, unless the high-test drug was diluted by the pharmacist using it, or an equivalent amount taken, which is considered doubtful, as war-time circumstances might not permit of it, the product he would compound from it, as say Dover's Powder, might vary 40% in Ipecac alkaloids from the same product compounded with drug testing 1.75% alkaloids. This is a variation much greater than the U. S. P. intends to admit of its products and one which in some cases might produce a dose possibly contraindicated in a patient to whom it is given.

For all of the above reasons, therefore, it is concluded that Powdered Ipecac should be recognized in the U. S. P. and that a maximum requirement of 2% ether-soluble alkaloids, equal to the standard of the International Protocol, should be established. Thus Powdered Ipecac would be standardized to contain not less than 1.75% nor more than 2% of ether-soluble alkaloids. A precedent for this is seen in the U. S. P. IX in the case of Opium, which like "whole" Ipecac is used only in the manufacture of standardized products and, therefore, has merely a minimum requirement. Powdered Opium, on the other hand, which is comparable to Powdered Ipecac, is "finished product" and has both minimum and a maximum standard.

ADVERTISING PHARMACY TO PHARMACISTS.*

BY J. C. PEACOCK.

To-day, one of the most regrettable facts is that pharmacy needs to be constantly advertised to some of us as a thing worth while as a business or, as a means of building business with other things.

Every drug store trades on the reputation of pharmacy, but its right to do so is only in direct proportion to the thought and care which is bestowed upon the department of pharmacy which the establishment includes. Whether the pharmacist has one side-line or a thousand and one is his own affair, provided he does not neglect pharmacy. That some make successes of all of their departments is readily understood when we discover their close attention to details and methods of watching the progress of affairs within the departments. They also have the good sense to limit their departments to those which do pay. But there are only a few individual proprietors, in pharmacy and other lines, who are endowed naturally with or have cultivated this ability to such a degree of perfection as to derive a commensurate profit from many lines.

For this simple reason of human limitation—the individual can only do a few things well—pharmacy needs to be advertised to pharmacists to save us from the distraction of an alluring commercialism that to some seems imperative to financial success.

In conducting an average pharmacy for a number of years there is sure to accumulate a certain amount of side-line business which fits into the trade with more or less ease; but, beyond such, to search for further varieties seems to the writer like misdirected effort on the part of the proprietor upon whom will probably devolve the constant supervision of this stock. For, unless lines are found

* Read before Section on Commercial Interests, A. Ph. A., Chicago meeting, 1918.

which can be handled expeditiously and without much extra help and effort, serious inroads are made upon the pharmacist's time and thought, both of which, we believe, can be more profitably devoted to affairs of a pharmaceutical nature.

It is not clearly understood why men and women, after taking the trouble to educate themselves and graduate in pharmacy will, when embarking in business, intentionally enter into lines of merchandise in which all may compete; whereas, their special training has been to fit them to undertake a line of work in which there is a measure of restriction from competition, because of the training required. Competition must certainly be less in an art that is looked upon by the public as requiring a special training in addition to ordinary commercial ability, than in the handling of a line of commodities which the public looks upon as a mere exchange of goods for money. But do we as pharmacists appreciate this thought? From this viewpoint, if acceded, it must seem credible that each individual effort to improve and extend the practice of pharmacy helps just that much to remove it from the bewildering competition which besets plain commercialism, and tends to shield pharmacy from competition with any other line now carried in the drug store, or contemplated as addition. If we could but see beyond this perplexing question we would perhaps view what hope pharmacy has in the future. There is little doubt that the temptation to imitate what looks like prosperity is the influence which leads some to start off with a burden of side-lines; while others are impelled by a distrust of the possibilities of pharmacy itself ever becoming a paying business. One or the other of these influences is likely to prompt him who is about to venture upon the uncertain sea of proprietorship. While we should not deny him the right of apprehension, we should ask him to give pharmacy at least an equal chance. Though we cannot see past this perplexity, we get a reflected light of encouragement from beyond it—the light of material success that shines from the loyal efforts of those who having confidence in pharmacy as a necessity are living up to the requirements of it as the prime factor in the drug store. That they do this for profit is no secret with them nor with their customers. That they derive a profit is because they apply to pharmacy the same attention and rules of finance which they use on the strictly commercial side-lines. They have found that a profit can be had from pharmacy if the same quality of thought that is given to the promotion of those side-lines requiring special effort is devoted to the development of a pharmaceutical department. These men figure pharmacy into finance and finance into pharmacy; their attention is on their business; they are keen to learn, to know and to act; they know the cost of production; they know the "millstone about their neck," called "overhead," they are aware of wastes in time and effort as well as in materials; they study losses, and what cannot be eliminated is figured into expense so it can be met. They utilize their time and talents to learn all of this as the only safeguard against a diminishing profit. They build up their stock of drugs to meet the demands of their trade as to staples, new items and preferences; they insist on quality in what is left to their discretion because eventually it bears their names. They are attentive to the wants of their pharmacy customers, and render service that shows an appreciation of the patronage they receive; and yet they do not belittle their services by giving them away for fear of competition, for each of them has been convinced by results that the better pharmacist he is the less he need to concern himself about competition,

as the term is generally accepted. To them the outcome of all of this is worth the effort.

Then must these be the reasons, though only the homely ones of interest and attention in varied forms, why pharmacy develops in some establishments and why it fails to flourish in others? But we want to discuss the latter phrase in words that pertain more directly to such barren fields. It is reiteration, we know, but does not the neglect of one or more of these simplicities which foster pharmacy constitute a reason why the art becomes unpopular with some of its votaries? To such, we quote "Poor Richard,"—"Keep your shop and your shop will keep you." Indeed the persons who enter a shop for pharmaceutical merchandise or service may fail to find the pharmacist, although his material body stands before them, because some side-line, either within or outside of his store, so preoccupies his attention that he fails to represent pharmacy. Perhaps he does not realize that through lack of interest he is losing an opportunity to advertise pharmacy to the public for his own immediate good, to say the least.

The pharmacist, who does not appreciate that he has a chance to turn his skill and time into money by developing his pharmaceutical department, needs to be told to study anew the opportunities of an art that but awaits his efforts. Let him not fail, as many do, to count the employment of his time, his very life, as of real value, whether it be devoted to the making of a preparation dispensed to-day or in the future. For failing to do this is to inflict a hardship, both upon himself and upon his brother pharmacist who seeks to benefit all pharmacists by endeavoring to improve the price as well as the service.

And now we see that pharmacy depends upon those who trade upon its reputation for both the preservation of the art and for its further development.

Pharmacy now seems to us a business as well as an art; and it is equally clear that it demands at least side-line common sense to enable it to show a profit. It asks no more; the choice of the direction of your effort rests with you and so accordingly the outcome.

So much for pharmacy as a worth-while business in itself, or as a department properly conducted. But the practice of pharmacy is such a comprehensive service that there is no end to the things which can be done within its province for profit, or of influences which may be caused to emanate from it to the same end.

The ability to handle the most difficult prescription is a means to public estimation which no pharmacist can afford to neglect as a most effectual advertisement, while careful attention to the smallest detail, delegated to the pharmacist, is an indication of his thoroughness and dependability under minor circumstances; attention never fails to become a source of profit to those who are willing to devote it to the cause of pharmacy.

Indeed the practice of pharmacy offers the best advertising medium that the store which houses it and the side-lines affords; it is a service which begets confidence; there is no side-line that will compare to the practice of pharmacy as a builder of confidence among your customers; and confidence, so built, is a great asset, because it is the glitter of an untarnished satisfaction.

Therefore, let us practice pharmacy unceasingly, if for no other reason, than as an advertisement for the side-lines, especially, since its neglect is not adver-

tisement for either side-lines or pharmacy. And again, no matter what the apparent success of the drug store may be, it can be more, if more pharmacy is practiced.

The scarcity of help, and the uncertainty of merchandise are probably now causing many pharmacists to wonder whether they should devote their time and attention to pharmacy or to side-lines. But let them consider that they now have an opportunity to conserve the art during a period of stress from which they must emerge the gainers, if they are true to their trust. While, on the other hand, if they neglect pharmacy and devote its time to side-lines, they will find that they have developed departments of trade into which, later, many must of necessity enter.

So, to the pharmacist who is undecided as to his course, or to him who is looking for a new side-line to boost a lagging business, we advise "take on a little more pharmacy, or, apply a little more time and business thought to what pharmacy you have."

OUR SOLDIER AND SAILOR PHARMACISTS.

To the Editor of Journal of the A. Ph. A.,

Philadelphia, Pa.

Dear Sir:

The A. Ph. A. Pharmacists' Soldier and Sailor Advisory Committee contemplates a really worth-while work. We are determined to find a place for every pharmacist now in the service, and to that end we are going to get in touch with every drug store in the country. More particularly we are going to make an effort to find occupation for every disabled soldier and sailor pharmacist. It will be our effort also to induce those pharmacists who have been engaged in business on their own account to buy a now existing drug store in preference to the opening of new drug stores. Our plans include, with the coöperation of the Association of Pharmaceutical Faculties, to induce every returning pharmacist who has not had the advantage of a Pharmacy College education to acquire one, and where conditions will not permit this, we are seeking to arrange a plan under which every returning pharmacist without college training can have a special One Year Course. In further aid we are working to secure, with the coöperation of the Association of Boards of Pharmacy, the right of Registration in any state where a returning pharmacist may desire to locate on the strength of Registration which he may now have in his home state. The details of our contemplated plans are too many to enumerate here. Our task is an enormous one, for which we will need all possible help.

The Committee will appreciate to have suggestions which may serve it in successfully carrying on its work. (Signed) Frank H. Freericks,

Cincinnati, O., *Chairman.*

November 18, 1918.

SECTION ON EDUCATION AND LEGISLATION, AMERICAN PHARMACEUTICAL ASSOCIATION.*

ABSTRACT OF MINUTES OF THE SESSIONS HELD IN CHICAGO, AUG. 14, 15, AND 16.

Chairman C. B. Jordan called the first session of the Section on Education and Legislation to order at 9.30 A.M., Wednesday, August 14, in Congress Hotel, Chicago.

C. A. Dye occupied the chair while the Chairman read his address.

Address of Chairman C. B. Jordan:

Fellow-Members of the American Pharmaceutical Association: This meeting of our Association takes place under most trying circumstances. Never in the history of the American Pharmaceutical Association has a meeting been held when our minds were so fraught with things foreign to Legislative and Educational Pharmacy. The thing that is uppermost in the minds of all of us is this World War. The thing that is most desired by all of us, and which is of the greatest import to all of us is the successful completion of the war. It matters little what we may say or do here, if that end be not attained. But I know that I express the firm conviction of all of you when I say that it will be attained.

Not a man, woman or child in the United States, but has been affected by its far-reaching results. It has been most forcibly brought home to all of us, and we have all been called upon "to do our bit."

American Pharmacy, has, I believe, nobly stood the test, and rendered well her part in this world crisis. The pharmacists of the United States have taken an active part in every Liberty Loan and Red Cross drive, in every Y. M. C. A. and K. C. campaign; in National, State and County Defense. Not only have we sent our young graduates and registered pharmacists to the front, but even young proprietors have entered the service. The drug stores of the country have sold Thrift and War Saving Stamps, have been repositories for French and Belgian Relief, and recruiting stations for Marines.

The colleges of pharmacy have done their part by preparing men for the service with regular and special war courses, by collecting and preparing drugs and medicines, and by even giving members of their instructional forces to the service.

Our young pharmacists have entered every branch of the service—Medical Corps, Engineering Corps, Infantry, Artillery, Navy, Gas Defense, Sanitary Corps, Aviation, and Ordnance Department, and are acquitting themselves well in all places. It was my good fortune to visit the Great Lakes Naval Training Station recently and to talk with the Assistant Surgeon of the Hospital Corps. He recounted with a great deal of pride the achievement of the Naval Hospital Corps, made up almost entirely of graduate and registered pharmacists.

The effects of the war are such that it is impossible to consider our legislative and educational problems apart from them. It has shown us our short-comings and has awakened us, as we never were awakened before, to the realization of our duties to the Nation and to ourselves. A number of years ago the N. A. R. D. attempted to secure recognition for the pharmacists in the Army, but they found that the pharmacists were asleep at the switch, were not interested, and luke-warm toward the movement. How well the war has awakened us. To-day we realize our mistake and are trying to remedy it, but we may have been aroused from our slumbers too late.

Three things, it seems to me, stand out and demand our attention: First, Securing legislation giving recognition to pharmacists in the Army. Second, Closer organization of American Pharmacy. Third, The attitude of the Government, of prominent pharmacists, and of the laity toward professional pharmacy, pharmaceutical education, and colleges of pharmacy. These questions are interdependent and cannot be considered apart from each other, therefore, I will not attempt to consider them separately but will endeavor to touch all of them in this discussion.

The profession of pharmacy and especially the colleges of pharmacy have suffered a cross-fire of criticism all year. Dr. J. H. Beal in "Facing the Facts," and Mr. H. B. Mason's editorials have criticized us for not recognizing that pharmacy has practically passed to commercialism, and our colleges are not, in their estimation, giving sufficient time to commercial subjects, but are

* Papers with discussions will be printed apart from minutes.

going to seed in professionalism which is not needed in present day practice. On the other hand the Government, through the office of the Surgeon General, criticizes us for devoting so much time to commercialism and so little to professionalism. They are painfully frank in their statements and say that colleges of pharmacy are educating mercantile clerks for the retail pharmacists of the country.

So we are criticized on the one hand for giving too much time to one phase of pharmacy, and not enough to the other, and criticized on the other hand for giving too much time to the other and not enough to the one. The colleges are placed somewhat in the position of the husband whose good wife scolded him if he did things and also scolded him if he didn't do them. He remarked, "Its mine coming or going, for I get Hell if I do and Hell if I don't." Ordinarily such criticisms are passed by as not having sufficient basis in facts to be worthy of serious consideration. However, coming from the sources that these come from, and with the acridity with which they are uttered, I believe they deserve our consideration.

There is one serious criticism of pharmaceutical education and of colleges of pharmacy that we all can agree upon, and that is that pharmaceutical education is not built upon a good, strong foundation and that our colleges are not demanding sufficient preliminary training of the entering students. It matters not whether the education of the pharmacist should be along commercial or along professional lines, this criticism still holds, for no true education can be built upon a poor foundation. The student who wishes to secure a college education along any other line finds that he must at least have a high school education before entering college. Medicine, Dentistry, Veterinary Science, Law, Commerce, Liberal Arts, Engineering, and even Agriculture, demand a high school education for entrance. Pharmacy stands alone in not demanding such high requirements. Can it be that Pharmacy is right and all the others are wrong? If it is necessary for the successful practice of Medicine, Commerce, Law, Engineering, etc. that the beginners have a broad general education, it is also necessary for the pursuit of Pharmacy. If the man who manages a farm finds that this preliminary education is necessary, how much more necessary is it for the man who follows a scientific profession or meets the fierce competition of the commercial world?

Some may argue that this particular education does not teach the student how to accumulate dollars and cents or how to create a desire for a commodity that he has to sell. This training develops the mind of the young student and teaches him correct habits of thought. In fact, many of our young people are unable to direct their thinking, while many others are prone to avoid mental exercises. This training, although it may not bear directly upon the work in hand, is of great value in mental development, and no one needs this mental development more than the pharmacist. He comes in contact with people in all walks of life, and ought to be able to meet these people upon an equal footing and discourse intelligently upon the topics of the day. In particular he ought to be able to speak intelligently concerning medicines and public health questions. If he does not have a good fundamental training, he will find himself handicapped in meeting this important obligation.

There is something necessary for the full development of the American citizen other than the ability to accumulate this world's goods. We are learning to-day, as we never did before, that a full rounded life gives as well as receives and, to be truly successful, we must render service to our neighbors as well as secure a competence for ourselves. If the war has taught us one thing it is this, that he who renders service to his fellow man and to the nation is more worthy of respect and honor than he who accumulates wealth. Not a little part of this service in a commonwealth like ours consists in activity in public welfare work, whereby the respect of the community is secured. Have the pharmacists of the country done their full measure along this line? Do they command the respect that an educated professional class should command? Do they take as active a part in public life as is expected of college men? To answer these questions I have but to state that we have endeavored for a year now to secure recognition in the Army, and have failed. What if somebody has the lid down and is sitting upon it! If we had sufficient public sentiment back of us, the lid would soon be lifted. The chemists of the country had no particular difficulty in securing recognition. The Sanitary Corps was organized especially to give recognition to bacteriologists, food chemists, sanitary and public health workers. Even nurses have received recognition, but we have failed. We failed because we lacked the necessary public sentiment to force recognition, and, I believe, that one of the

chief reasons why we lacked it, is because our profession ranks very low in educational attainment. When a man, whose only qualifications are that he has sold cigars, or "jerked" sodas for four years, can cram for a pharmacist's examination and pass it, and thus become a bona fide member of our profession, we cannot expect to command much respect, and we are not getting it.

Not until the retail pharmacists of the United States awake to the importance of higher entrance requirements for their profession and demand them, will we be able to place pharmaceutical education on a plane that will command the respect of our sister professions and of the public. As long as the retail pharmacists demand cheap registered men and lend their support to diploma factories that turn them out, just so long will pharmaceutical education be at a low ebb. The colleges themselves are unable to remedy the difficulty, because there are bound to be "black sheep" in the fold if there is financial gain in being black.

Turning now to the criticisms of which I have spoken. Doctor Beal, in "Facing the Facts," very ably presents the problems that confront us to-day. He discusses the whole question and shows us the reasons for the rise of "commercial pharmacy" and the decline of professional pharmacy. He asks, "Shall we like other small industrial proprietors, accept the transformation from producers to store-keepers and distributors, or shall we linger in a fool's paradise of hoping for some special dispensation of Providence to save us from the operation of economic laws that are universal in application?" He then proceeds to show us that "commercial pharmacy" is just as ethical as professional pharmacy, or at least can be made so.

Mr. H. B. Mason, commenting editorially upon the speech of Dr. Beal, says that this address should have been given before a group of pharmaceutical teachers and writers instead of before a group of retail pharmacists, as they have been "facing the facts." Continuing he says, "Too many of the college professors and too many of the writers and lecturers on pharmacy are still seeking, like Mrs. Partington, to sweep the ocean back with a broom. The college curriculum becomes more and more scientific. Little or no attention is paid to commercial subjects. The student is told that he must go out into the highways and byways and play the part of a pharmaceutical Moses and rescue the calling from the disgrace into which it has fallen."

In the July issue of the *Bulletin*, Mr. Mason says, "Only a half-hearted recognition of 'commercial pharmacy' has been made. Perhaps the most unfortunate feature of the solution lies in the fact that the colleges are not so blind as to what is going on as they are stubborn. They see the truth, but they refuse to recognize it."

Over and against such criticism we have that of the office of the Surgeon General of the Army in replying to the Attorney for the N. A. R. D. when he requested that students in pharmacy be furloughed to complete their college courses. This Office made it very clear that it considered a great majority of the colleges of pharmacy as colleges in name only, since their most important function was preparing mercantile clerks for retail pharmacies. There are only about eight real colleges of pharmacy in the United States, according to their expressed opinion, and the Surgeon General hesitates to recognize them because of the difficulty involved in denying recognition to the other so-called colleges.

At the recent meetings of the American Medical Association the Council refused to endorse the recognition of the pharmacists in the Army. When the members of the Council were asked why they refused to do this, they said that they could not afford to recognize as equals a class of men with as little professional education as the pharmacists have.

Again, the fact that we have not been able to convince the House Committee on Military Affairs of the necessity of recognition of pharmacists in the Army is good evidence that they consider our professional training insufficient.

Thus our colleges are attacked by one set of critics for not devoting more time to commercial and less to professional subjects, and by another set of critics for giving so much attention to commercial and so little attention to professional subjects.

I maintain that the colleges of pharmacy are giving the retail pharmacists what they demand. There are a goodly number of retail pharmacists that are demanding better and better professionally prepared graduates and our better colleges of pharmacy are meeting this demand. On the other hand, there are many retail pharmacists that demand a commercially trained man with a sufficient smattering of professionalism to get him by the State Board of Pharmacy, and we have a number of colleges that are supplying this demand.

Mr. Mason is wrong when he says that the colleges are stubborn. Those colleges that, in his opinion, are going to seed in professionalism, have a deep realization of the obligation, often a matter of life or death, that devolves upon pharmacists and they are willing to sacrifice numbers in order to protect the public from incompetence. When the dispensing of prescriptions is separated from commercialism and done entirely by men who love their work sufficiently to take pride in it and do it well, then we will have a reorganization of our colleges that will meet the needs of both sets of critics.

The trouble lies in the attempt of the retail pharmacists of the country to do two entirely different things well at the same time. This is impossible. Either they should devote themselves to commercialism or to professionalism. I have heard retail pharmacists say that they were not dispensing pharmacists and catered entirely to commercial trade. Yet the same men retain the sign "Prescription Pharmacists," and resent any imputation that they are not fully qualified for professional work. They refuse to remove their prescription laboratories, and turn over to their neighbors any professional work. The prescription sign and laboratory add a respectability to their business and they intend to retain it regardless of the fact that they are not devoting any time or interest to professional work.

A certain retail druggist has a card advertisement in every street car in his city, setting forth the care and precision used in compounding prescriptions in his place of business. I visited his store and expected to see a modern prescription laboratory. In this I was disappointed, for it was not what you would expect from the advertisement. When I remarked that he must do a good prescription business, I was surprised to have the proprietor tell me—with a sweep of his hand toward his well filled shelves—that he made his money out of paints, wall paper, patent medicines, drug sundries, etc., and that his prescription work amounted to nothing. Yet it was his prescription work that he was advertising. He was using it as a cat's paw to get people into his store so that he might sell them paints, wall paper, drug sundries, etc.

The cases that I have set forth are not unique and can be multiplied many times throughout the United States. Until the retail pharmacists stop using their professionalism only as a means to further their commercialism, we cannot expect to advance.

Many retail pharmacists demand cheap help and say that they are not able to pay the college prepared man, and are therefore in favor of keeping the requirements low that they may secure cheap help. One of the chief arguments against "prerequisite" legislation is that it will increase clerk hire. If these men are not able to pay competent help, why, under the sun, do they not give up their prescription work that is bringing them no profit and devote their entire attention to commercialism?

It is absolutely impossible to develop commercial and professional pharmacy together. We have tried to do it ever since American pharmacy began and have failed, as is evidenced by the criticism I have just set forth. Either one or the other or both will suffer if we continue to do it. They are incompatible, and we may as well "face the facts" and recognize the incompatibility and with true pharmaceutical skill remove it. As long as we continue to attempt to develop them together we will fail, because it is based upon the wrong assumption, that we can become proficient in two quite different things at the same time. The man who tried to kill two birds with one stone missed them both, and we have also missed both the full development of "professional pharmacy" and of "commercial pharmacy." European countries have recognized the absurdity of such an attempt and have solved the problem. Why not follow their example?

Let us then get back to a true premise and separate them and develop each without the encumbrance of the other—have colleges to train "commercial pharmacists," and also colleges to train "professional pharmacists." One class of education is just as ethical as the other. The old idea that to educate for merchandising is unethical is antiquated and out of date. We have changed our ideas a great deal regarding what is ethical and what is unethical, and the man who retains the old notion that "commercial pharmacy" is unethical should wake up and realize that we are living in an age that is wise enough to consider any useful occupation as ethical.

Let us have good colleges with high requirements that will give our boys a good broad education together with expert training in "commercial pharmacy," and also good colleges that will do the same for "professional pharmacy." When we do this, then and then only will we

reach a solution to our difficulties. "Professional pharmacy" has been a millstone around the neck of "commercial pharmacy" and vice versa long enough. Let us cut them free and permit them to develop, each to its full measure.

You may ask how this is to be done. I answer, "I do not know." I only know that it is necessary for the full development of each. The operation may be a little severe, but the patients will soon recover from it and once they get upon their feet they will produce marvelous developments.

May I suggest a plan by which this may eventually be accomplished without disturbing business conditions. All registered pharmacists of to-day will retain their registration and enjoy their full privileges, therefore we must begin with those who are entering. If all entering the calling be divided into two classes, say pharmacists and druggists, with different requirements and privileges for each of them, then the first step toward this end would be made, and eventually our aim would be accomplished. This could be done without disturbing business, or causing hardship to any one.

Require of druggists a pharmaceutical competence similar to that required of assistant pharmacists to-day or even that required of registered pharmacists, and in addition a thorough training in all commercial branches. Grant them the privilege of conducting a modern commercial drug store, but not the privilege of compounding prescriptions or handling the more dangerous poisons and narcotics.

Require of pharmacists at least a training equivalent to that required for a baccalaureate degree, including the usual cultural subjects of English, mathematics, modern languages, physics, history, economics, etc., and a thorough training in chemistry, pharmacy, materia medica, bacteriology, physiology, chemistry, and food and drug analysis.

Men with such a training would be competent to dispense medicines, handle narcotics, and other poisons, and do analytical work for the physician and public health boards. There is to-day a demand for men qualified for making urine, gastric, bile and feces analyses; bacteriological and physiological analysis; and the demand for such experts is growing instead of decreasing. A pharmacist prepared as suggested would be qualified to do all of this work. In addition the demand for laboratory analyses for the protection of public health is growing, and in some states they are advocating a public analyst for each county. Here is another opportunity for our pharmacists. Before very long the prescription business done by our present pharmacists would be turned over to them and this—together with the sale of sick-room supplies, surgical instruments, etc.—would make a very good competence for the pharmacists. They would be conducting a purely ethical pharmacy, in the present-day acceptance of the meaning of this term, and in addition a bacteriological, analytical, and physiological laboratory.

I think I hear you say that there would not be a sufficient amount of work to support even a limited number of such pharmacists. My own city alone, a city of 20,000, could support three or four such pharmacists if all prescription work were turned over to them. At present a man is employed all of his time in making urine, gastric, bile, bacteriological and physiological analyses, with an increasing demand for this kind of work. It may be that smaller communities could not support such an establishment at present, but time will adjust this difficulty and meanwhile the present registered pharmacists could handle the prescription business.

The colleges of pharmacy could easily adjust themselves to such a plan. Our present two-year courses, if extended and modified to suit the needs, could easily educate druggists, and our four-year courses the pharmacists. The graduates of our four-year courses are not entering the drug stores to-day, because clerk hire is so low, and other activities offer better opportunities. This is unfortunate, because pharmacy is losing its best prepared men. This would be changed with the newer opportunities that would present themselves in "professional pharmacy."

When we require of pharmacists a training similar to that which I have outlined, then the matter of recognition will take care of itself. In fact, their services would be demanded, conscripted if need be, and proper recognition in the form of commissions would be given to them.

American pharmacy is so unorganized that it is almost impossible to secure united action on any matters pertaining to the professional side of the calling, albeit we have preached organization for the last fifty years. Such is not true of other lines of work. We have excellent evidence of the power of organization in the strength wielded by the American Medical Asso-

ciation. In my own state about ten percent of the registered pharmacists are members of their state organization, while ninety percent of the ice men are members of their organization. It has been impossible to well organize the pharmacists of any of the states except those in which membership in the state organization is required by law. The mere handful of retail pharmacists that belong to the American Pharmaceutical Association is conclusive proof that the organization of pharmacists along professional lines is next to impossible.

Along the commercial lines the endeavor meets with much better success, and the N. A. R. D. has a very well perfected organization, that is producing results. One reason for this is because many retail pharmacists do not do a sufficient "professional" business to become interested in the scientific phase of their calling. The scientific sections of our State Associations receive scanty attention. I have seen retail pharmacists sit with a bored expression on their faces throughout an interesting paper on some phase of "professional pharmacy." They were not interested because they could not apply the ideas to their business.

Now if the separation that I have referred to were made, we would throw together men interested in the same things, the merchant pharmacists and the prescription and analytical pharmacists. As a result of common interest and common purpose these men would form a closer and more effective organization and another one of our problems would be solved.

The idea of the separation of "professional" and "commercial" pharmacy is not a new one, by any means, but one that has been thought about and discussed many times. Papers on this subject have been presented to this Section before. In "Facing the Facts" Dr. Beal says, "The results ('that is a frank acceptance of commercial pharmacy'), will be an acceleration of the present trend towards a division of the drug trade into prescription pharmacists and merchant pharmacists, each class rendering useful service and each having scope for development along the lines of their respective preferences."

I firmly believe that this separation is the only satisfactory solution of the problem and that the time is ripe for both parties to take the case to court and sue for a divorce. No organization is better fitted to judge the case than the American Pharmaceutical Association, therefore, in conclusion, I would suggest that this Section recommend to the Council that a Committee be appointed to study this question for a year and present to us at our next annual meeting a plan of separation that will cause the least amount of harm and the greatest amount of good to both of the unhappy parties.

C. B. JORDAN,
Chairman.

F. J. Wulling moved and F. E. Stewart seconded the motion, that the address be printed in an early issue of the JOURNAL and the recommendation of the address be referred to the Council. Carried.

Report of Secretary W. F. Rudd:

MR. CHAIRMAN AND MEMBERS OF THE SECTION ON EDUCATION AND LEGISLATION:

Before attempting to write this report your Secretary read again the one submitted in 1917 to this Section, by your present Chairman.

Those of you who were present on that occasion will recall that his report brought together in a most comprehensive way what the Colleges, State Legislatures and State Boards of Pharmacy were doing. I concluded that the report of this year should bring to the Section all changes in State Pharmacy Laws that have been made since the last annual meeting so as to keep the record up to date. In addition to this it seemed wise to collect and tabulate certain facts relative to State Board statistics. Accordingly, a questionnaire was sent to each State Board Secretary as follows:

"1—What changes have been made in the Pharmacy law of your State since January 1, 1917?

2—What percent of applicants for examination in your State since January 1, 1917, have been graduates of Colleges of Pharmacy?

3—Number of applicants for examination for each of the following years:

April 1, 1914, to April 1, 1915
April 1, 1915, to April 1, 1916
April 1, 1916, to April 1, 1917
April 1, 1917, to April 1, 1918

4—Number of applicants granted registration for each of the following years:
April 1, 1914, to April 1, 1915
April 1, 1915, to April 1, 1916
April 1, 1916, to April 1, 1917
April 1, 1917, to April 1, 1918."

Question No. 2 relative to the percentage of applicants who were college graduates was suggested by Chairman Jordan. Questions 3 and 4 relative to number of applicants for examination and the number successful were suggested by the writer's own observation of results in Virginia. It has always seemed incongruous that often not more than one-third of those admitted as eligible for any formal examination, should be able to pass the same successfully.

The results for these States as tabulated below are striking. The writer cannot but feel that they furnish the basis for a strong indictment against the present system of admitting canditates to State Board examinations.

Replies have come in from thirty-one States and Question 2, as to percentage of applicants who are college graduates, has been answered as follows:

Alabama.....20%
Arkansas.....(Reports none) (evidently an error)
Illinois.....39%
Iowa.....20%
Kentucky.....78%
Maine.....15% (about)
Michigan.....10%
Missouri.....10.7%
New Hampshire.....(No record)
New Mexico.....(No record)
North Dakota.....100%
Ohio.....28%
Rhode Island.....80%
South Carolina.....68%
Vermont.....40%
Virginia.....35%
Florida.....50% (about)
Conn.....No figures available
Indiana.....47%
Kansas.....40%
Massachusetts.....No statistics
Maryland.....87%
Minn.....12½% (about)
Nebraska.....86%
New Jersey.....(No record)
New York.....100%
North Carolina.....19%
Pennsylvania.....100%
Tennessee.....50% (guess)
Texas.....49%
West Virginia.....75%

The States with "prerequisite" law already in force report, of course, 100 percent. The States showing lowest percentage of graduates are: Maine, Michigan, Minnesota, and Missouri, all being below 20 percent. The State not having a "prerequisite" law, showing the highest percentage of graduates, is Maryland, with 87 percent. The general average for this report is 50 percent of graduates. That is to say, with States having "prerequisite" legislation only 50 percent of all men making application for examination in the States are graduates in pharmacy.

The thirty-one States returning questionnaire report on questions 3 and 4 are as follows:

April 1914 to April 1918.

States.	No. Applied.	No. Successful.	Per cent. Successful.	States.	No. Applied.	No. Successful.	Per cent. Successful.
Ala.	446	359	80.5	N. J.	2315	688	29.8
Ark.	487	216	44.3	N. Mex.	34	24	70.6
Conn.	330	110	33.3	N. Y.	2592	1885	72.7
Ill.	2355	758	32.2	N. D.	125	71	56.8
Ind.	1029	513	49.7	N. C.	518	227	43.8
Ia.	1065	514	48.2	O.	2105	1029	48.8
Mass.	2042	630	30.8	Pa.	2437	1667	68.0
Kan.	601	442	73.0	R. I.	137	98	80.0
Ky.	355	134	37.7	S. Car.	263	153	58.0
Me.	410	136	33.2	Tenn.	337	142	42.1
Md.	382	218	56.7	Tex.	629	385	61.2
Mich.	1340	672	50.2	Vt.	128	45	36.0
Minn.	1432	559	39.0	Va.	672	307	45.0
Mo.	529	310	58.5	W. Va.	268	158	59.0
Neb.	609	300	49.2				
N. H.	218	82	37.6		26190	12832	48.9

Tabulating the preceding by years we get the following results:

	Total No. Applied.	Total No. Passed.	Per cent. Passed.
April 1914 to April 1915	7088	3501	49.3
April 1915 to April 1916	7328	3493	47.9
April 1916 to April 1917	6961	3297	47.3
April 1917 to April 1918	5855	3267	55.8

These figures tell in unmistakable terms what most of us know from experience. In the past four years the number applying for examination has decreased from 7088 to 5855, or a difference of 1233. The number successful, however, was only 234 below the number registered four years ago. This seems to mean one of two things: either the material is better or the boards are more lenient. Maybe both conditions contributed to this end.

Repeating what was said in the first part of this report, it would seem that the percent of those successful in any set of examinations where proper precautions are taken in admitting candidates, should always be much above the average shown in the figures above. Why should candidates manifestly unfit be allowed to come up repeatedly without any additional preparation? Perhaps nothing has done as much to bring pharmacy examinations into disrepute as the fact that the same men continue to take these examinations year after year. This condition needs to be changed. This Section can at least go on record in favor of some method by which a limit may be set to the number of times a man may come up for examination.

Very few changes have been reported in the pharmacy laws of the thirty-one States returning questionnaires. Massachusetts has a new narcotic law; New Jersey a "prerequisite" law to take effect September 1920; Rhode Island reports changes in narcotic provisions; Virginia passed a "prerequisite" law which will go into effect in 1922.

And so the good work goes on. Each year adds one or two States to the list requiring graduation before registration. At the present time nine States are enrolled in this progressive list. May the time not be far distant when not one shall be left out.

Respectfully submitted,

WORTLEY F. RUDD,

Secretary.

W. H. Ziegler moved and Bernard Fantus seconded the motion to refer the report for publication. Carried.

The report of the Committeee on Patents and Trade Marks was presented by Chairman F. E. Stewart. Motion of L. E. Sayre to receive the report was carried by vote of the Section.

A paper "What is the meaning of a degree in pharmacy" was read by the author, L. E. Sayre. (See August JOURNAL A. PH. A., p. 700.)

The next paper, entitled "The District of Columbia Advertising Law," was presented by L. F. Kebler.

After considerable discussion the following resolution was proposed by M. E. Dorsey:

> "*Resolved*, That the Committee on Legislation, A. Ph. A., be instructed to take up with the War Board at Washington, D. C., the control of advertising pertaining to venereal diseases, and by coöperation with the Advertising Clubs of America, a national organization, endeavor to eliminate all advertising pertaining to venereal diseases from the daily and weekly press."

After some discussion a motion to adopt was carried.

The following papers were read and, after discussion, referred for publication:

"Publication of Potent Drug Content in All Ready-made Medicines," by Oscar Dowling.

"Pronunciation of Pharmaceutical Latin," by A. B. Stevens.

The report of the Committee on Regulation of the Transportation of Drugs by Mail was read and accepted.

A paper "What Shall We Teach" was presented by H. H. Rusby and after discussion referred for publication.

The first session of the Section on Education and Legislation was then adjourned.

SECOND SESSION.

The second session of the Section on Education and Legislation was convened at 9.30 A.M., Thursday, August 15, by Chairman C. B. Jordan.

The Committee on Nominations for officers for the ensuing year reported the names of nominees.

The following papers were read, discussed and referred for publication:

"Chemical Theory—A Practical Method of Teaching," by Freeman P. Stroup. (See October JOURNAL A. PH. A., p. 864.)

"Plan of Civil Administrative Code of Illinois in Its Relation to the Pharmacy Act," by F. W. Shepardson.

"The Teaching of Plant Chemistry," by Dr. Nellie Wakeman.

"Is Research Work Along Lines Suggested by the Last Revision U. S. P. Possible and Practicable in Schools of Pharmacy?" by C. S. Chase.

"Entrance Requirements to the Practice of Pharmacy," by W. G. Gregory. (See October JOURNAL A. PH. A., p. 870.)

"So-called Commercial Pharmacy Should not be Taught in Colleges of Pharmacy," by Frederick J. Wulling. (See October JOURNAL A. PH. A., p. 872.)

"The Future Pharmacists now in the Army and Navy," by H. F. Freericks. (The recommendations of this paper are printed in the minutes of the Sixth Session of the Council, November JOURNAL A. PH. A., pp. 1004 and 1005.)

A ballot was taken on the nominees for officers for the ensuing year; the result of the election to be announced at the Joint Session of this Section, the National Association of Boards of Pharmacy and American Conference of Pharmaceutical Faculties.

The second session of the Section on Education and Legislation was then adjourned.

JOINT SESSION OF SECTION ON EDUCATION AND LEGISLATION, A. PH. A., AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES AND NATIONAL ASSOCIATION OF BOARDS OF PHARMACY.

The joint session, as indicated above, was called to order by Chairman C. B. Jordan at 9.30 A.M., Friday, August 16.

The first order of business was the report of Secretary Theodore J. Bradley of the proceedings of the American Conference of Pharmaceutical Faculties. (See September JOURNAL A. PH. A., p. 799.) After some discussion the report was accepted.

Chairman F. E. Stewart read the report of the Committee on Patents and Trade Marks and also a paper entitled "Is the Exclusive Ownership and Use of Coined Names for Chemicals, Drugs and Their Preparations Objectionable and Should it be Subject to Limitation and Restriction?"

It was moved to accept the paper and report and refer them to the Publication Committee. Carried.

The result of the election of officers for the ensuing year was announced by Julius A. Koch, as follows:

Chairman—W. F. Rudd, of Virginia.

Secretary—C. A. Dye, of Ohio.

Associates—William Mansfield, of New York; E. L. Newcomb, of Minnesota; W. H. Ziegler, of South Carolina.

The report of the Fifteenth Annual Meeting of the National Association of Boards of Pharmacy was read by Secretary H. C. Christensen. (See September JOURNAL A. PH. A., p. 801.) After brief discussion the report was accepted.

Chairman Frank H. Freericks presented the report of the Committee on Model for Modern Laws Pertaining to Pharmacy. It was voted to continue the Committee and the report was referred for publication.

Chairman C. A. Dye presented the report of the Committee on Relations of Colleges with Boards of Pharmacy. It was referred to the American Conference of Pharmaceutical Faculties.

Chairman E. G. Eberle presented the report of the Fairchild Scholarship Committee.

REPORT OF THE CHAIRMAN OF FAIRCHILD SCHOLARSHIP COMMITTEE.

PHILADELPHIA, August 1, 1918.

As Chairman of the Fairchild Scholarship Committee my report has been made to the members of the Committee and also to Mr. Samuel W. Fairchild, so a report on last year's work simply requires me to speak of the results. Mr. Daniel Kollen, of New York, was the successful candidate, and his election met the approval of all members of the Committee and Mr. Fairchild as well. The next highest ranking candidate fell only 2.5 points behind, while the others were considerably lower.

The first American Fairchild scholar is of Russian birth, having been born in the city of Kishinef, State of Bessarabia, Russia, August 27, 1898. The father was a maker of wooden models for shoes; he died when Daniel was about eight years of age. The young man attended a Russian grammar school for about three and a half years and until April 1, 1910, when the family emigrated to the United States, arriving in New York City April 19. Two weeks after arrival Kollen entered Manhattan Public School No. 64, where June 29, 1913, the young man received his diploma. The spare hours and vacations were spent in the employ of his uncle at S. H. Ager's Pharmacy, 145 Avenue C, New York City, where he has ever since, up to the present, given his time between studies. September 9, 1913, Daniel entered DeWitt Clinton High School, New York City, from which he graduated June 30, 1917. His recommendations from the teachers and preceptor are excellent in every way.

All the papers concerned with the examinations are in my hands and I also have copies of all correspondence bearing on the subject. On February 15th I notified Mr. Fairchild of the election of Daniel Kollen, and at the same time advised him of the action of the Joint Conference as I understood it at the time, and enclosed the pages from the JOURNAL of January, 1918, 60–64. My letter follows:

"February 15, 1918.

MR. SAMUEL W. FAIRCHILD,
WASHINGTON & LAIGHT STS.,
NEW YORK CITY.
DEAR MR. FAIRCHILD:—

I wrote you January 31 and was awaiting the return of the vote of the Fairchild Scholarship Committee and they have unanimously declared that Daniel Kollen, 600 E. 169th St., New York City, has won the Fairchild Scholarship which you so kindly donated. I do not

presume that any further action on our part is necessary and that you will take up the matter with the nominee. Of course, if you deem it necessary, I shall be glad to attend to the matter.

I take this opportunity also of bringing the matter of award for the next scholarship to your attention, and, if you decide to act in accord with the expression of the Section on Education and Legislation of the American Pharmaceutical Association, the American Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy, it will be necessary for us to provide a different standard for the candidates and thereafter a different kind of examination. It would take up too much space in this letter and the action on my report will be found on the enclosed pages.

One argument for awarding the scholarship to a graduate is that there is more likelihood of giving it, not only to a deserving student, but, at the same time, to one who will apply himself for the benefit of pharmacy. The question came up of whether in awarding one scholarship it was not better to give it to one who had shown his aptness rather than one who had all the college years before him. I would be glad if you would advise me of your decision as early as you can.

The Fairchild Scholarship Committee for this year is composed of the following members: Dr. A. R. L. Dohme, Pratt & Howard Sts., Baltimore, of the American Pharmaceutical Association; Prof. Henry Kraemer, Univ. of Michigan, Ann Arbor, of the American Conference of Pharmaceutical Faculties; W. P. Porterfield, 61 Broadway, Fargo, N. D., of the National Association Boards of Pharmacy, and the Editor of the JOURNAL.

I have notified Mr. Daniel Kollen of his election.

With expression of sincere regard, Respectfully,

(Sgd.) E. G. EBERLE."

In reply, Mr. Fairchild answered:

"NEW YORK, February 18, 1918.

MR. E. G. EBERLE, CHAIRMAN,
FAIRCHILD SCHOLARSHIP COMMITTEE,
PHILADELPHIA, PA.

DEAR MR. EBERLE:—

I notice with pleasure the article in the JOURNAL, page 60, recommendation No. 5, 'It is the sense of the Conference that Mr. Fairchild could render the greatest service to pharmacy by offering the scholarship to a graduate pharmacy student.' Now, Mr. Eberle, I shall be delighted to do so, and think perhaps it is the best thing we could do with the Scholarship, so you may change it around and do anything that you please.

When does Mr. Daniel Kollen begin his studies? Then we will know when to send him a cheque.

With kind regards and best wishes, I am

Yours very truly,

(Sgd.) SAM'L W. FAIRCHILD."

and my answer was as follows:—

"February 19, 1918.

MR. SAMUEL W. FAIRCHILD,
WASHINGTON & LAIGHT STS.,
NEW YORK CITY.

DEAR MR. FAIRCHILD:—

I have your splendid letter of February 18 and under the circumstances the Fairchild Scholarship Committee will undoubtedly be very much pleased to have your consent to offer your scholarship to a graduate pharmacy student. I am to-day sending out letters to that effect.

Relative to Mr. Daniel Kollen, he began his studies in Brooklyn College of Pharmacy last fall and is now a junior student there.

We are endeavoring to make haste with the next scholarship so that it can be offered for a graduate student for this year. This will then right the matter and there will be no further trouble in awarding the scholarship each year.

With expression of sincere regard, Respectfully,

(Sgd.) E. G. EBERLE,
Chairman, Fairchild Scholarship Committee."

On February 19 I sent out the first letter, as a result of which the following were named as the Examination Committee: J. W. Sturmer, H. C. Christensen, Geo. C. Diekman, R. A. Lyman. A date, June 25, was named for Examination Day, but as it was impossible to reach a decision, notice of postponement was made and all pharmaceutical journals kindly printed the notice. There has been considerable correspondence and the decision was reached that final action would be taken during the meeting of the American Pharmaceutical Association in Chicago.

Respectfully,

E. G. EBERLE, *Chairman*.

Further report of the Committee on Award of the Fairchild Scholarship is printed in September JOURNAL A. PH. A., p. 824. Since then Chairman H. C. Christensen has advised that the name of no candidate has been presented this year for the Fairchild Scholarship.

Chairman R. A. Lyman presented the report of the Committee on Higher Educational Standards. After some discussion it was voted to refer the report to the American Conference of Pharmaceutical Faculties.

The paper presented at the close of the Second Session of the Section on Education and Legislation by Frank H. Freericks was discussed and, after approving of the recommendations therein, referred to the Council.

(As heretofore stated, the recommendations are printed in November JOURNAL A. PH. A., p. 1004. The Council has taken action and the Committee is now at work.)

The Joint Session of the Section of Education and Legislation, American Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy was then adjourned.

WHAT SHALL WE TEACH?*

BY H. H. RUSBY.

The teacher who is thoroughly interested in the subject matter of the Syllabus cannot fail to be impressed by the objections that are advanced against the inclusion of matter that does not pertain to the particular department of instruction in which the objector is interested. It is a regular occurrence for such teachers to depreciate the value of and disparage attention to the subjects taught by others. Within the last few months the writer has been favored with the following views, partly verbal and partly written, from teachers whose schools are represented in the American Conference of Pharmaceutical Faculties.

1. "You make the subject of pharmacy entirely too prominent in the Syllabus. Pharmacists no longer manufacture their own preparations and they are getting farther away from it all the time. The pharmacist is becoming more and more a tradesman. What we want in the Syllabus is more attention to the commercial side of the business."

2. "Only the fundamental principles and procedures of business should be taught in the pharmacy school. The way to learn business methods is by business experience, and the place for it is the store, the same as in any other department of commerce."

3. "The pharmacy course is no place for so much botanical instruction as is contained in the Syllabus." "Boards of pharmacy do not ask questions upon it and should not do so." "Botany is a delightful study and I find great recreation in pursuing it in my spare time, but the pharmacist has no use for it and it should be deleted from the pharmacy course."

4. "An extreme amount of attention is given to pharmacognosy in your Syllabus. The retail pharmacist no longer sees crude drugs to any extent and is seeing less and less of them in any condition. Only a very few drugs should be studied and those only in a superficial way."

* Read before Section on Education and Legislation, A. Ph. A., Chicago meeting, 1918.

5. "Not one drug store in a hundred possesses a compound microscope and the average pharmacist will never look into one after leaving the school."

6. "There is no sense whatever in going so extensively into the subject of physiology. The retail pharmacist has no use for this knowledge and it is a waste of good time for the teacher to devote more than a few hours to it." This number of hours has been variously stated at from twenty-five to ten, this allowing for both lectures and recitations.

7. The study of the actions and the uses of drugs is said to be a complete work of supererogation. "If it has any permanent effect it is that of tending to encourage counter prescribing, which offends the physician and tends to widen the breach between physician and pharmacist."

8. One would suppose that the subject of chemistry in pharmacy teaching would be safe from the hands of the vandal, but this is very far from being true. We have been subjected to severe criticism for what is called "an attempt to make analytical chemists out of pharmacy clerks." Even pharmaceutical testing for purity of product has been roundly criticized, and that by successful, prominent and highly educated pharmacists, on the ground that "pharmacists very rarely test their drugs, and could not begin to do so if they desired, without employing a chemist for that special purpose." It is declared that this time should be devoted to teaching pharmacy proper.

The one subject that has been practically free from criticism is toxicology. There appears to be a unanimous agreement that knowledge of toxicology is a prime requisite, as a means of safety for the pharmacist and his clerks and customers. I ask particular attention to this fact as it has a special bearing on what follows.

In quoting the above views, I must not be understood as disparaging any one of them. There is truth and sound reasoning in all. On the other hand, there are considerations of a directly opposite nature, which have been wholly ignored by these critics and it is to be remembered that for each and every one of the subjects mentioned, there are claimants demanding that they should receive far more attention than is now given them. Regarding a number of them, there are claims that they respectively constitute the backbone of the pharmacy course, this word "backbone" having actually been employed in a number of arguments. Two facts are quite obvious: First, that they cannot all be backbones; second, that it is the usual thing for a specialist to think that his special subject is the backbone of the structure.

I can readily imagine the reflections with which different members of the audience have listened to the views quoted, and I think that I can single out most of those who entertain the respective opinions concerning them. In the case of each claim there are some who would like to cry out "Amen" in good old Methodist fashion, while others are curling the lip of contempt. The Syllabus maker can do neither. He is a referee and he must act as a judge. We should all be Syllabus makers. Even our most ardent specialists should place a curb upon their enthusiasm and endeavor to get the viewpoint of the other. Is it not time that we should systematize our work and formulate our methods of Syllabus revision? The only way to do this is to study the relations of each subject to each of the others and so treat it that it shall contribute the most possible to the value of the complete work. We must indeed go farther, and give some attention to the functions of the Syllabus course as the foundation for additional work in graduate and special courses. It is with this in mind that I submit for consideration certain facts upon which should be based definite principles and rules of action in Syllabus revision:

1. The pharmacy course of the present Syllabus is a very short and necessarily very incomplete course and must therefore be directed toward the accomplishment of a specific purpose, namely that of preparing ordinary clerks for pharmacy, prescription work being the main subject to be considered.

2. This course is not intended to prepare specialists in any part of the pharmaceutical field, and Syllabus makers should firmly resist any attempt by the teachers of specialties to pervert the Syllabus into an organ for turning out their music.

3. The relation of each subject to each other, as to explaining it and rendering its teaching most efficient in the production of a useful whole, should be more carefully studied than it is and should constitute the main guide in determining the extent to which that subject should be admitted into the course.

4. The course of the Syllabus is so highly inadequate, even for the one purpose that it has in view, that it must be assumed that all who enter the profession of pharmacy will go far beyond the Syllabus field, either in an additional school course, or through information subsequently gained, in one way or another.

5. For the reason just stated, the Syllabus must be regarded, in addition to the above characterization, as a preparation for the subsequent pursuit of specialties. This office of the Syllabus course cannot be too seriously considered, and Syllabus makers should proceed as carefully in fitting it for this service as for that of preparing for the pharmacy board examination.

Considering carefully all the inconsistencies, exaggerations and absurdities which abound so profusely in Syllabus criticism, it is clear that almost without exception they proceed from a failure to appreciate one or another of the principles which I have enunciated. The first requisite for Syllabus harmony is their recognition and observance.

It is because of this fact that I have insisted, as I still do, that the only way to make a good Syllabus is to begin our investigation at the top and to determine what kind of a foundation will be necessary for the superstructure. This is a very different process from that of beginning to build at the top, and it is the method that is employed in all architectural work.

Pursuing such a study based on the above principles, I have reached the following conclusions:

Considering the subject of toxicology as less subject to adverse criticism than others, let us see what preparatory instruction is necessary for its intelligent study. It involves a knowledge of what substances are poisonous and of the nature of their poisonous properties; also the relations between their medicinal actions and uses and possible poisoning by them. This necessarily involves some knowledge of diseased functions, which in turn involves a comparison between that and healthy functions. A study of healthy functions is physiology and no mere question and answer course in it will meet the above necessity. We can limit the field considerably but we must study that field quite closely and, above all, rationally. Physiology is called for in an additional direction. Every one now regards pharmacodynamics, miscalled "pharmacology" by many, as one of the important subjects of the advanced course. How is it possible for one to experiment on animals, as to the action of drugs, without a good knowledge of physiology, and of anatomy as well? I conclude that no reduction in the physiology of the present Syllabus can be made, unless medicinal action and toxicology are to be deleted, and that much more of it is necessary as a preparation for pharmacodynamics.

It appears equally obvious that the poisonous and medicinal constituents of drugs must be known from the chemical point of view before anything can be

done in studying their action. The organic chemistry of the Syllabus is at the very most no more than sufficient for this purpose. As to the inorganics, no argument seems called for to show that no portion of the inorganic chemistry of the Syllabus can be spared.

If this is true of chemistry as a basis for materia medica and toxicology study, what is to be said of it as a basis for pharmacy? Who can claim that any part of the chemistry now in the Syllabus is not essential as foundation for other work, without considering the subject of chemical analysis at all? Who can deny that another year should be allowed to permit of increased chemical instruction as a basis for advanced courses?

If our Syllabus chemistry is indispensable in preparing for materia medica, toxicology and pharmacy, what shall be said of our fragmentary and elementary physics course as a preparation for chemistry and pharmacognosy? Certainly, no portion of it can be spared!

To how great an extent is a knowledge of pharmacognosy necessary in the study of materia medica? None can deny that some crude and powdered drugs are regularly sold in our pharmacies, nor that others are used by practically all pharmacists in their own operations. A practical knowledge of such articles, and the ability to examine and test them by the use of both the simple and compound microscope, is a necessity of the most practical character. It is claimed that because such drugs form but a small portion of the complete lists of the Pharmacopoeia and Formulary, we should omit the study of the others from the Syllabus course; but consider for a moment what would be the opinion of the medical profession of a pharmacy course that did not include the study of all the articles that are included in the two books which constitute our legal standard. Imagine a profession ignorant of the very identity of the articles that are legally standardized as to both identity and purity! I would admit that many of the minor drugs might be but little studied, but I would never admit that any of them should be dismissed with no attention whatever.

What does the necessary preparation for the study of pharmacognosy include? Supposing that we studied thoroughly only twenty-five or fifty drugs; do they not contain all the vegetable tissues, and would they not include every portion of the plant? How then could any part of the structural and descriptive botany of the Syllabus, as to both outer and inner structure, be omitted, without crippling the student of pharmacognosy at a later period? The question as to whether boards of pharmacy ask questions has no relation whatever to the study of subjects fundamental to others on which they do ask questions. We never knew a board to ask questions in spelling, grammar or common arithmetic, but they assume that the candidate must know these subjects, and I think that any candidate found seriously deficient in them should be thrown out. It is the necessary and useful status of physics, physiology and botany as fundamentals that should control the decisions of Syllabus makers regarding their admission. The present botany of the Syllabus cannot be curtailed!

As to our pharmacy, it, if anything, should be regarded as the "backbone" of the Syllabus. Whether pharmacists actually make a preparation in their practical business or not, no man who does know how it is made should be regarded or licensed as a pharmacist. This is the department toward which all the others

herein considered are contributory, and we should have more rather than less of it.

It is my conviction, after most careful consideration of the subject, and investigations of all other views that could be obtained, that so long as our course remains of its present proportions, we cannot do better than to retain as compulsory all the subject matter now made so, and that we should include, properly indicated by brackets or otherwise, considerably more than is to be recommended for those schools in whose courses it can be incorporated; also, that the matter for a third year should be recommended as desirable and an effort made to lead up to the definite inclusion of such a third year's work.

In conclusion, I wish to say a few words regarding the duty of the Conference of Faculties of bringing to the attention of the high schools and of state authorities who pass judgment upon the work of such schools, the necessity of insisting more rigidly on better scholarship on the part of those who are graduated and promoted from one class to another. The habit of depending solely upon marks, good-naturedly and loosely allowed, results in supplying us with matriculants who must subsequently be taught by us the things which they are supposed to know before coming to us. Who has not had one, two and three year high school students, and even graduates, who are incompetent to perform or understand ordinary arithmetical problems, whose spelling and grammar are disgraceful and whose knowledge of Latin is limited to *Sic Semper Tyrannis* or *E. Pluribus Unum?*

In my opinion, the Conference of Faculties should investigate this subject and take suitable action.

DISCUSSIONS.

C. A. DYE: Doctor Rusby has made plain something that is fundamentally sound, something that I fear at some day may, if I am a good judge, interfere with the working of our prerequisite law. The question came up in Ohio when we were attempting to pass a prerequisite law, what could we adopt for a commercial course? We adopted the Pharmaceutical Syllabus of 1913, which includes some commercial work. Can the law make it compulsory so that a school must teach a certain amount of bookkeeping, a certain amount of advertising, and a certain amount of other business subjects? I am very much in favor of teaching commercial subjects, but I believe we ought to have in the Syllabus, as Dr. Rusby has said, a skeleton to build upon. Is the Pharmaceutical Syllabus compulsory for members of our Conference or does the Conference recommend it as a basis for pharmacy courses?

CHAIRMAN C. B. JORDAN: I understand it is to be used as a basis, that a certain number of hours be given by colleges to the subjects but they can go beyond these requirements. Dr. Rusby is a better authority.

H. H. RUSBY: You are right, but when the State Board adopts the Syllabus, as many boards have done, then it becomes compulsory.

CHAIRMAN C. B. JORDAN: I doubt very much if your State Board will insist that you teach exactly what is in the Syllabus.

C. A. DYE: They will demand that we teach the number of hours required by the Syllabus. When it comes to insisting on the number of hours on commercial subjects, I don't know what they may do. The Conference should adopt a standard for a pharmacy course and make it mandatory for its membership. That will give us something to work upon.

CHAIRMAN C. B. JORDAN: I take it that is what our Syllabus is as far as the number of hours is concerned.

C. A. DYE: That is mandatory, is it?

CHAIRMAN C. B. JORDAN: It is understood you will adopt the number of hours, but not necessarily the methods employed for teaching. Am I not right, Dr. Rusby?

H. H. RUSBY: That is perfectly right.

THE ADMINISTRATION OF PHARMACY PROBLEMS IN ILLINOIS.*

BY FRANCIS W. SHEPARDSON.[1]

During the thirty-six years between 1881 and 1917, the enforcement of the Pharmacy Act in Illinois was in charge of the State Board of Pharmacy. On July 1, 1917, a new and somewhat revolutionary governmental plan became operative. The Pharmacy Board was abolished and all of its rights, powers and duties were vested in the Department of Registration and Education. This is one of the nine departments under what is known as "The Civil Administrative Code." Efficiency in the enforcement of the Pharmacy Act is, to a large degree, dependent upon powers granted by the code, and, as there has been some anxiety among leading representatives of Pharmacy in the country lest Illinois has taken a backward step, so far as the interests of the profession are concerned, it may not be out of place to consider for a short time this new, unusual and attractive administrative machinery for State government.

The present Constitution of the State of Illinois became operative in 1870. Although amendments have been made to it from time to time, its main provisions are substantially as they were first written. Nearly a half century, marked by astonishing changes, has elapsed. Illinois has become an imperial commonwealth. Its population has been trebled. Its problems have increased in complexity with the social, economic and industrial changes. The governmental result was the creation in Illinois from time to time of many special boards and commissions. These were designed primarily to relieve overburdened constitutional officers from tasks which it was physically impossible for them to perform. In practical experience these boards and commissions, eventually more than one hundred and thirty in number, tended to become semi-independent administrative factors in government, each with its own headquarters, officers and equipment. Almost inevitably conflicts of jurisdiction resulted and with them, naturally, much duplication of effort and expenditure.

This condition was recognized by many as undesirable. During a period of ten years there was agitation and discussion of the necessity for a change. An Efficiency and Economy Commission was appointed to provide a more perfect system of accounting and to combine and centralize duties. It was hoped that this study would lead to the rejection of much useless machinery and to a reorganization of the State government on modern business lines. The committee selected a trained political scientist as director, took the advice of a large number of officials and other citizens, held many hearings at which testimony was presented from almost every possible point of view. As a result of the investigations, there was published a report of 1,050 pages, everywhere recognized as one of the most remarkable documents in the history of State government in this country. But there was not much effort to make the work count toward definite reforms until the gubernatorial campaign of 1916. This made the occasion for placing the code project before the people for general consideration and discussion. Colonel Frank O. Lowden made its championship one of the prominent planks in his platform. Immediately after the people had chosen him to the high position of Gover-

* Read before Section on Education and Legislation, A. Ph. A., Chicago meeting, 1918.

[1] Director of Registration and Education.

nor, he took active measures to make the idea a reality. He had long believed in the possibility of conducting the affairs of a State on business principles. In his inaugural address he emphasized the importance of the administrative reform. He secured the coöperation of many members of the Legislature. He devoted long hours of study to the problem. Largely because of his earnest, personal advocacy, the Civil Administrative Code became law.

Its salient feature is the combination of the various governmental agencies. Nine departments are created, those of Finance, Agriculture, Labor, Mines and Minerals, Public Works and Buildings, Public Welfare, Public Health, Trade and Commerce, and of Registration and Education. For each of these departments there is an executive officer, called a Director, who is required to devote his entire time to the State work, this being an important new feature. He is provided with such subordinate assistants as are deemed necessary, the number varying in the different departments.

The Code has now been in operation for nearly fourteen months. Experience has amply justified those who so strongly urged the administrative reform. The new machinery has worked far more smoothly than its most sanguine supporters had hoped. It has won new friends steadily. Naturally there have been some difficulties. The period of operation is as yet too short to warrant final judgment. Deficits from previous years had to be paid from the receipts of this year, and imperative expenditures for long-needed repairs and improvements had to be met. The extraordinary conditions of the past year of war, such as the rise in the cost of commodities, the exceptional coal bills due to the severe winter, and the increase in postage and in railroad rates, made havoc of plans for retrenchment. In spite of all obstacles, however, the financial reports of the first year showed gratifying economies and substantial savings, along with greatly increased efficiency. All who are actively associated with Governor Lowden in the administration are confident that the Code will commend itself to the people of Illinois more and more, if its spendid features are given a chance for a fair trial under more normal conditions.

The Department of Finance is the keystone of the structure. Its work is certain to show substantial results. Its officers are giving the most painstaking scrutiny to all outlays, and many kinds of waste heretofore ignored are being effectively checked. They are studying the expenditures of every part of the State government with the purpose of preparing a detailed budget under which, for the first time, the State's business may be conducted in a systematic manner and with the same economy and fidelity demanded in all successful private or corporate undertakings.

It ought to be said that the centralization of administration under the Code is not complete because outside of its jurisdiction are the Civil Service Commission, a few remaining boards and the so-called constitutional offices, such as those of the Secretary of State, the Auditor of Public Accounts, the State Treasurer, the Superintendent of Public Instruction and the Regents of the State University. Should the campaign for the much-needed new constitution, adapted to the requirements of a great State such as Illinois has grown to be since 1870, be successful, one outcome of a constitutional convention might well be the inclusion of the duties of all these officers under similar proper departments. In actual practice,

however, there has been complete harmony between the Constitutional officers and the Code ones, so that the entire governmental machinery at Springfield has been working smoothly in the direction of exceptional administrative achievement.

Limitations of time do not permit further consideration of the Code in its entirety. It is a remarkable State document. It represents a notable advance in political science. The plan of organization of each department is extremely interesting. The distribution of powers among the departments, the internal workings of the departments and the great number and variety of the problems requiring administrative solution are alike attractive. A widespread interest in the Code has been awakened. Many letters of inquiry about it have been received. Several other States are giving serious consideration to the adoption of a similar plan of government. Anyone who cares to study the thirty-seven page booklet containing this epoch-marking legislative act will be well repaid.

The special concern of this association is in the administration of the Pharmacy Act of Illinois. In the reorganization scheme the licensure of pharmacists was placed in the Department of Registration and Education. Something about this Department, therefore, may be of interest to you.

While the double name, Registration and Education, seems to imply divided activity, a closer survey of the powers and duties of the Department shows that the thought of education is the dominant one. The word "Registration" relates to the administrative work associated with all of those professions and trades from whose members the State requires a license. The Department has jurisdiction over about a dozen different lines of endeavor, including those of the architects, barbers, chiropodists, dentists, embalmers, horseshoers, midwives, nurses, pharmacists, physicians, plumbers, structural engineers, and veterinarians. In its main office in Springfield, it has a staff of twenty-five persons, whose work is being so organized as to distribute responsibility most effectively and to secure accuracy, efficiency and promptness in administration. It maintains a Chicago office in the rooms formerly occupied by the Pharmacy Board.

The oversight of the licensing features of the activities of the Department is placed in the hands of an official called the Superintendent of Registration. He is charged with the arrangements for the necessary examinations as provided for in the Statutes, with the furnishing of adequate assistance for the examinations, with the notification of the successful candidates, with the keeping of the records and files of certification, and with the large amount of correspondence relating to licensure in the several lines. Inasmuch as all the laws which regulate licensure provide for the evaluation of credentials both of preliminary education and of professional training, the Division of Registration has among its duties the collection of the essential preliminary information about applicants and the investigation of their qualifications for examinations.

So, naturally, the Department must concern itself with the establishment of standards and the approval of both the schools themselves and of their courses of instruction. If the authority given by the Code and by the several practice acts should be invoked to its full degree, the power of the Department over schools of all grades and types would prove to be very great.

The word "Education" in the Department's title, therefore, does not imply

an entire change of thought from that of "Registration." It may, however, be taken to refer to certain types of higher education, which are carried on under State auspices, and which are professional, investigational, or strictly scientific in their nature. The five normal schools which, before, were controlled by separate boards of trustees, are now placed under the jurisdiction of the Department, with a single board of which the Director of Registration and Education is chairman. Grouped under the Department, also, are the three scientific surveys, located at Urbana, in connection with the State University, namely, the State Geological Survey, the State Water Survey, and the State Natural History Survey. For the study of the needs of these surveys and the development of their work, a special advisory board of scientists, called "The Board of Natural Resources and Conservation" and representing the different fields of research touched by the surveys, has been provided, the Director of the Department being its chairman. The Department has jurisdiction also over the State Museum, located at Springfield. For advice regarding its management there is a board composed of specialists representing the five different lines of activity with which the museum concerns itself, namely, botany, ethnology, zoölogy, manufacture, and museum administration.

In the selection of the members of these advisory and executive boards, the desire was to secure individuals of the highest character entirely regardless of political affiliation, whose names would carry weight whenever mentioned. The responses to invitations to serve the State in these non-salaried positions were most gratifying, many men of national reputation as specialists gladly lending their aid. The Department has been greatly strengthened in its administration by its ability to command the assistance and advice of men of such preëminence. The magnitude of its educational work, if expressed in terms of appropriations, which for the biennium exceed $1,962,000, is such as to make it fairly comparable with similar special departments in a great American university.

The controlling idea behind the Civil Administrative Code has been stated to be combination and coördination with localization of authority under responsible individuals. There is no doubt that the personnel of the directorate is a most important element in the successful working out of the plan. If the Code lent itself to the machinery of political organization, and the selection of officers were made purely for partisan reasons, special fitness for a given task being made entirely subordinate, there might reasonably be fear for the result. The scope of the activities of the several departments, however, is so broad as not only to require the full-time service of individuals of recognized responsibility and position, but also to present to them for solution problems demanding the highest talent, and worthy of a strong man's best endeavor.

The Code specifically provides that the Director of Registration and Education, the Assistant Director, and the Superintendent of Registration shall not be affiliated with any college or school of medicine, pharmacy, dentistry, nursing, optometry, embalming, barbering, veterinary medicine and surgery, architecture or structural engineering, either as a teacher, officer or stockholder, nor shall they hold license or certificate to exercise or practice any of the professions, trades or occupations regulated.

This provision has caused some confusion, where the complete story of admin-

istration has not been told. It has been reported, for instance, that some pharmacists have thought that Illinois had taken the licensing of members of their profession out of the hands of those properly qualified by training to be the judges. A little reflection makes the reason for the restriction apparent. Absolute impartiality and exact justice are more likely to be secured where personal interest or possible professional jealousy is absent. In the working out of the Code plan there has been marked a notable change of attitude toward the law on the part of violators, whether intentional offenders or chance ones. The prospect of being prosecuted by a great Department of a State Government, the executive officers of which are not members of the profession involved, and whose main interest in the case is that of the enforcement of the law of the State, appears to be much more feared than was the danger of trouble with members of a board connected with the same profession. This has had many illustrations since last July. There is no doubt that every practice act of Illinois has become far more effective than it ever has been, because it now has behind it the machinery, the resources and the administrative power of a State Department. The interests of pharmacy in Illinois never were so well protected as they are under the Department of Registration and Education, even though the long-familiar term "State Board" has been thrown into the discard.

Another restriction of the Code provides that, whenever the several laws regulating professions, trades and occupations which are devolved upon the Department for administration, so require, certain enumerated functions and duties shall be exercised. These relate to standards of admission, curricula of schools and colleges, rules and regulations of examinations, conduct of examinations, the granting and revoking of licenses. It is definitely declared that, where the law of a profession, trade or occupation so requires, none of these enumerated functions and duties shall be exercised by the Department except upon the action and report in writing of persons designated from time to time by the Director to take such action and to make such report.

This restriction is a safeguard against personal inefficiency, arbitrariness, or corruption on the part of the Director. It also is designed to indicate clearly the pervading idea of the Code that, while the administrative duties of former State Boards have passed under the control of a department, the strictly professional features are properly safeguarded.

The Code provides for the pharmacists a committee of five persons, each of whom shall be a competent registered pharmacist in the State, and shall have had ten years' practical experience in the dispensing of physicians' prescriptions since such registration. The members of this committee, as of all similar ones in the Department, are appointed "from time to time." These words are important. There is no exact term of service for a member of an examining committee. The advantage of the limitation has already been shown in a number of cases, where trial revealed the fact that the individual selected for one profession or another was not well chosen. The objection to this plan is made, that there may be lack of continuity of policy from the professional point of view where there is uncertainty of tenure of committee members. This is obviated by the possibility of reappointment of those whose worth has been proved in actual experience. The danger in the personal appointment feature is the danger attending the entire

Code plan. An individual honored with selection as director of a department, or, for that matter, given any important task to perform anywhere, either will, or will not, rise to his responsibilities.

Another objection is urged that the word "Committee" does not carry with it as much honor as the word "Board," and is not understood in other States. The answer to this has already been given in the declaration that the interests of Pharmacy in Illinois never were so well protected as now and that other States, on becoming advised of the facts, will learn to honor the members of the committees chosen from the profession for the aid of the Department. And here it may be stated that a third safeguard of the Code declares that in making the designation of persons to act for the several professions, trades and occupations, the Director shall give due consideration to recommendations by members of the respective professions, trades and occupations, and by organizations therein.

Working under these general limitations, the Department has been successful in establishing friendly relationships with the best interests of every one of the professions and trades coming under its jurisdiction. In the selection of the first committees to work under the new plan, great care was taken. The Department officers desired a certain degree of continuity between the proceedings of the new Department and those of the old State Boards. They had an ambition to secure as advisers, groups of men whose names would command respect throughout the State, and who, in themselves, would be an assurance to all that under no circumstances could there be retrogression under the changed conditions of the Code. The practice acts have been enforced strictly. The examinations have been above suspicion. The committee members have worked faithfully and promptly, and generous commendations have come from many influential citizens who have expressed their opinion that the laws in which they have been specially interested have been interpreted and enforced in a highly satisfactory manner.

Several questions have been considered by the Department during the year which have general interest to the profession of pharmacy. One relates to the situation which confronts the drug trade owing to the effect of the draft. In many parts of the State it was practically impossible to find properly equipped individuals to serve as registered pharmacists or assistant pharmacists. As a result, proprietors oftentimes found themselves placed in embarrassing situations where they were not able to conform to that part of the State law which requires that the stores shall be at all times in charge of a competent registered pharmacist. After much thought and after conference with representative men of the retail drug business, the Department prepared a list of articles which, during certain specified hours of the day, might be sold by apprentices. This list was printed in attractive form and given wide circulation throughout the State. Great care was taken to safeguard the interests of the public by express prohibitions, the privileges extended not including the right to compound or fill physicians' prescriptions. The action of the Department was received with grateful appreciation by the trade, whose leading members agreed to aid in the prosecution of any individuals detected in attempting to take advantage of the special war-time emergency arrangement.

Another matter which was considered to some extent was the propriety of

the annual registration fee. In an address delivered before the Illinois State Pharmaceutical Association this subject was discussed as follows:

It has been brought to the attention of the Department that some members of the profession have questioned the value of the annual registration fee. Whoever takes that position surely is uninformed regarding the usefulness of this bit of administrative machinery. Through it the Department is enabled to keep in touch with legal practitioners. It has proved a great aid in keeping a correct list of addresses. The requirement of reporting once a year the location of each registered man is extremely important. The plan furnishes funds for the Department at slight cost to the individual pharmacist. The Department has no funds at all except those voted to it by the Legislature in return for fees received from the different professions, trades and occupations licensed. An attack upon the registration fee becomes an attack upon the pharmacy law. Surely the interests of the pharmacists naturally should lie in the direction of the maintenance of a proper force to keep the pharmacy law respected. Furthermore the willing payment of such a small fee provides a splendid argument against the imposition of a larger annual State license fee, quite easily possible in these days of regulation when governments everywhere are seeking for increased opportunities for raising needed funds. It makes a splendid protection for the pharmacist against such taxes to be able to say that for years he has been accustomed to the payment of such a registration fee in order to maintain the provisions of the pharmacy law. Incidentally it may be said here that the pharmacy registration fee has been the model upon which members of other professions and trades have based laws for the regulation of their own interests. The close connection maintained by the Department with legal practitioners through the contribution of these fees has enabled it, as its predecessor the State Board of Pharmacy was enabled, to enforce the pharmacy law against the illegal and unworthy.

The object of the law is to insure that the innocent public may not be imposed upon by unscrupulous people in the matter of drugs, medicines and poisons; that every drug store in the State shall be under the supervision of a duly qualified pharmacist; that none but competent, reliable and trained men shall be permitted to sell dangerous poisons and compound physicians' prescriptions; that proper labels are affixed to containers of deadly poisons; that substitution and adulteration are not permitted and that the standard of the profession is elevated. It is a measure not only to protect the lives and health of the people, but to protect the legitimate pharmacist in his profession. Were it not for the restraining influence of the pharmacy law, every pharmacist in the State would be at the complete mercy of unscrupulous competitors, seeking to impose upon the people in the matter of the sale of drugs, medicine and poisons. This would be a lowering of the high standard of the profession to the level of a strictly commercial basis, without regard to efficiency or knowledge of the science of drugs, medicines and poisons. Should the pharmacy law be stricken from the statute books of Illinois, it would not be long until there would be twice as many so-called pharmacies in the State as there are at the present time. No more effective weapon could be used against the law than the withdrawal of the registration fees which have furnished, and which must still furnish, the money by whose aid the law is enforced.

A suggestion has been made in some quarters, and it is left with you for discussion, that in addition to the registration fee of the pharmacists or assistant pharmacists, all drug stores themselves should be registered. The advantages of this proposition are clear. Such a regulation would tend to limit the competition of general merchants in many lines which ought to be restricted to drug stores. If a law provided that no stores for the sale of drugs could be opened in Illinois without a certificate from the Department of Registration and Education, there might be opportunity for important restrictions. For example, it might be possible to limit the number of drug stores within a given radius or, better yet, to provide that the total number of drug stores in a community should bear a definite proportion to the total population. It may be an open question whether the closing up of a good many drug stores and the employment of their pharmacists in other stores might not on the whole be a desirable thing for the profession. This undoubtedly would be true in many communities where the normal trade

has been so divided up as to make it difficult for an individual to prosper; whereas with one store where now there are two, both men interested might reap better financial returns.

One other problem in pharmacy has presented itself. The Department has been making careful studies of professional education. It has been advancing standards wherever it has had the power to do so. It has raised the preliminary requirement for admission to a school of pharmacy recognized by it to two years of high school work. It has done this much under the authority granted to it in two paragraphs of the Code. One of these empowers it to prescribe rules and regulations defining, for the respective professions, trades and occupations, what shall constitute a school, college or university, or department of a university, or other institutions, reputable and in good standing, and to determine the reputability and good standing of a school, college or university, or department of a university, or other institution, reputable and in good standing by reference to a compliance with such rules and regulations. Another authorizes it to establish a standard of preliminary education deemed requisite to admission to a school, college or university, and to require satisfactory proof of the enforcement of such standard by schools, colleges and universities.

But its officers, as laymen, have not found anything to make them particularly proud of the professional requirements in pharmacy. It is an open question whether people generally or the officers of pharmacy schools really think of pharmacy as a profession, so notably has the purely commercial element entered into the situation. The chances are that if a hundred individuals were asked whether they ever thought of a pharmacist as a professional man, or the drug store as the home of a professional man, their answers would be in the negative. If they were asked to describe a drug store, they would undoubtedly tell of a soda fountain, a cigar stand, a candy counter, and a place where brushes of various kinds, face lotions or soaps might be secured, a sort of department store on the corner with a big electrical sign. If the professional side were mentioned at all, in all likelihood it would have to be after further questioning. When the pharmacist, in such a situation, hurries quickly to state that it is necessary for him to run this type of a store in order to make a living, he only increases the doubt which arises as to whether, after all, he is a professional man or is merely a tradesman.

So when the question of the establishment of a Pharmacy Reserve Corps in the United States Army is considered, any inquiry runs almost immediately upon the obvious fact that the requirements to enter pharmacy in this country are not such as would warrant the business to be placed for a moment by the side of medicine or dentistry. When the report of the hearing before the Congressional Committee on Military Affairs is examined, it is discovered that one of the arguments advanced for this Pharmacy Corps is that other countries have a similar arrangement. But when the detailed statements of the requirements for pharmacy in those other countries are examined, it is at once apparent that there is no basis of comparison whatever between the thorough-going preparation required there and the slipshod methods pursued in the United States. Ninety out of a hundred of the same individuals above mentioned, if questioned about the qualifications for a pharmacist, would indicate a pleasant disposition, a cheerful greeting of customers and a good-natured tolerance of all sorts of neighborhood imposition, as

the important factors, utterly forgetful of the professional side: Has the man had the foundation principles in the shape of high school training; has he had the wider outlook furnished by a college course or part of it; has he had systematic and thorough instruction in a professional school of pharmacy? The answers are in the negative, and in the popular mind such qualifications are entirely unnecessary for pharmacy in America.

As has been said, the situation is worse when abundant evidence is available that officers and teachers in pharmacy schools, in many cases, lack the educational qualifications needed and have slight interest in advancing the standards of their profession.

The Department recognizes this situation and understands that in the minds of most of those concerned, the pharmacist is a tradesman and not a professional man, that the commercial element, both in school and in store, far exceeds the educational one in importance, and that any advance step which the Department may desire to take in pharmacy, along with forward movements in other professions, must be limited by the low standards which prevail so far as preliminary education, equipment of teachers and educational ideals of the institution are concerned. At the same time it will be glad to coöperate heartily in any step for the betterment of the situation and for aiding the development of a real profession of pharmacy and for the reclaiming of what ought to be a noble guild with high ideals from its present commercialized surroundings.

DISCUSSION.

In response to questions propounded Mr. F. W. Shepardson said:

The department has an appropriation for inspection. Two of the present inspectors were employed in that capacity under the old State Board of Pharmacy. The Attorney General of the State is prosecutor. The law requires that the administration officers shall not be connected with any of the trades or professions regulated by this enactment. Among the trades and professions concerned, and the members of which pay registration fees, are pharmacists, dentists, engineers, architects, barbers, horse-shoers. A campaign is now being made among medical men to secure their endorsement of the registration feature for physicians, and there is every reason to believe that the plan will be endorsed by them.

F. H. FREERICKS: Dr. Shepardson refers to the effort to establish a pharmaceutical corps in the Army, and gives as one of the reasons for failing in that that the pharmacists cannot lay claim to education to meet the educational requirements; that his standing is that of a merchant and not that of a professional man. I do not believe that the statement should go altogether unchallenged because, in my opinion, it places somewhat of a wrong construction upon the entire situation. Medicine to-day has that much-desired recognition in the Army, and we must take the man in medicine as he is, and by way of comparison we must take the pharmacist as he is to-day. I venture to say that when you take the fifty thousand pharmacists of this country and set them up against the hundred and fifty to two hundred thousand medical men in this country, you will find proportionately as many educated men in pharmacy as you do in medicine. I think it is unfair to say that pharmacy should not be recognized for the reason assigned. I do not believe it is right that there should go out of this organization and with the approval of this Association an expression on our own part that we are not as well qualified for our work, that the pharmacists as a whole in this country are not as deserving of the recognition sought, as are the medical men for the recognition they have deservedly gained.

R. A. LYMAN: I fear the words of Mr. Freericks are apt to stir up feeling between medical men and pharmacists: we ought to have this because medical men have such and such. We ought to forget that; it is entirely immaterial. Dr Shepardson hit the nail on the head when he said that teachers in pharmacy in the colleges of America have a very low ideal of the practice of pharmacy as a profession. I think there is where the real trouble is. I have always main-

tained in our meetings, as you know, that the schools of America and its educators set the pace for what the public think about us, and we have to look to pharmaceutical educators to elevate the ideals or ideas that the layman has of pharmacy as a profession. I think that Dr. Shepardson is exactly right when he places the blame upon pharmaceutical educators, and I for one, representing at least a certain type of educators of America, thank him for his courage in coming here and making that statement before us. He is a man from the outside and that expression of opinion from Illinois will do the pharmaceutical educators of America a whole lot of good, and indirectly be responsible for improving our professional standing.

F. J. WULLING: Dr. Lyman's statement that "pharmaceutical educators are responsible for conditions" should be modified somewhat. If he would say a faction of pharmaceutical educators are to blame I would agree entirely. There is another faction of pharmaceutical educators who feel that they have been working toward these higher aims and ideals against great odds, and they have accomplished something in the face of those odds. There are schools and practicing pharmacists at the present day who are equal to the best schools in medicine and practitioners of medicine.

I arose to say this particularly: That we are all thinking along the same lines, and those are upward lines. President Kraemer, of the Faculties, has made a recommendation which is exactly in line with this. Others made similar recommendations last year and three or four years ago, namely, that the present condition in pharmacy be recognized, that there are reputable and well-trained pharmacists, educated men who can meet representatives of other callings. The situation has been recognized in the recommendation for two classes of pharmacists or two classes of drug stores—one the pharmacist practitioner and the other a drug store—and that the colleges also arrange themselves accordingly. Possibly there would be no objection to the same college having two courses; I don't know. The fact is, we are working practically along the same line with the idea suggested by Dr. Shepardson.

Another thing: Many years ago a large number of pharmacists said that unless we pharmacists as a whole, the body pharmaceutical, puts its house in order, somebody else will do it for us. Here we have an instance of somebody stepping in who is not a pharmacist. I am not passing judgment upon the commission; many things Dr. Shepardson said I heartily agree with; in fact, he has endorsed my sentiments in many respects. This is only one instance of an outside agent coming in to regulate pharmacists and to say what they are to do and enforce what they are to do. We have let that slip away from us.

BOLSHEVISM IN PHARMACY.*

BY CHARLES H. LAWALL.

Words and phrases have associated concepts which may differ so greatly in different individuals that when these individuals enter into a discussion they are often talking about things which are diametrically opposed. "Pharmaceutical education," "pharmaceutical practice" and "pharmaceutical progress" are examples of phrases, often the subject of controversy in which there is no common ground of understanding. Indeed it is often true that these concepts are changed in the individual under the influence of time and environment. No definition of a liberal education has ever been given which surpasses the following, by Huxley, which is quoted to show how comprehensive and detailed a definition sometimes becomes.

"That man, I think, has had a liberal education who has been so trained in youth that his body is the ready servant of his will, and does with ease and pleasure all the work that, as a mechanism, it is capable of; whose intellect is a clear, cold, logic engine, with all its parts of equal strength, and in smooth working order; ready like a steam engine to be turned on any kind of work, and spin the gossamers

* Read at the November meeting of the Philadelphia Branch of the A. Ph. A.

as well as forge the anchors of the mind; whose mind is stored with a knowledge of the great and fundamental truths of nature and of the laws of her operations; one, who, no stunted ascetic, is full of life and fire, but whose passions are trained to come to heel by a vigorous will, the servant of a tender conscience; who has learned to love all beauty, whether of nature or of art, to hate all vileness, and to respect others as himself."

When we come to the question of pharmaceutical education or any other kind of scientific or professional education, however, we are dealing with a more restricted and specialized field. Without attempting to inflict upon you an arbitrary definition of this kind of education, I will state that I believe *that man is best educated who is most useful to his community and to his profession or trade,* whatever it may be. For further explanation of my personal views on some of these questions, I will take the unusual liberty of referring you to two previous articles in which I have expressed them. One is the address of the chairman of the Section on Education and Legislation of the A. Ph. A., published in the Proceedings of 1910, page 605. The other is an article entitled "When Is an Education not an Education?" JOUR. A. PH. A., 1915, p. 176. The views expressed on fundamentals in these two articles have not materially changed during the passage of time, but conditions have recently arisen which seem to call for further expression of opinion on certain phases of the situation.

There seems to be at present a peculiar tendency to throw discredit on commercialism of any kind in connection with pharmacy. The reason for this is seen every time one looks into the windows or sees the advertisements of a certain type of drug store, but why the large number of high-minded, ethical pharmacists, who are practicing their profession with the respect and support of leading members of the medical profession in their communities, should on that account be held up to scorn, is hard to understand.

We are led to believe that because Mr. X. or Mr. Y. makes a larger proportion of his gross profits from the sale of merchandise other than drugs, pharmacy is going to the dogs. Why should any stigma attach to a man because he is a good merchandiser? This double responsibility of such an individual to the community has been well expressed by Dr. Jacob Diner, as follows:

"On one side we must have the professionally trained man; on the other we must prepare the same man to be commercially able to avail himself of every honest, legitimate means for the financial advancement of his business."

The attempt to classify pharmacists according to professional attainments has been recurrent for centuries past. One of the first recorded legal enactments affecting pharmacy was that of Frederick II, of Sicily, in 1233 A. D. This law mentions "*apotheca*" in the sense of warehouses where drugs were stored; compounders of medicines were called "*confectionarii*," and sellers of simple medicines were called "*stationarii*." As throwing light on the subject of "side-lines," the following will be found of interest:

In the 16th century the Guild of Nuremburg druggists presented a memorial of grievances in which, among others, are the following complaints:

1. The sale of all confections has now fallen into the hands of the sugar dealer.

2. Counter sales (of spices) are now made by all of the large spice and cheap corner grocery shops, thus robbing the druggist of a source of profit that he is justly entitled to.

3. The sale of sundries, such as sealing wax, fumigating pastilles, paper, ink and pens is now taking place in common huckster shops.

4. The sugar dealers are not only selling confections but also all kinds of fruit juices and all such preserves as do not deteriorate in the course of a year.

These same Nuremburg pharmacists stated that "many of our brethren have matriculated at universities, some have attended academies, and others have even graduated as doctors. We consider that our profession is not a trade but is in reality a free art."

In the 18th century the pharmacists were held in derision for their claim to professional recognition, by Professor Hoffmann, one of the early professors of the University of Halle, who stated their scope of knowledge in the following way:

"The apothecary should know that an acid and an alkali, when brought into contact, will effervesce. It will suffice if he but know the effect although he may be ignorant of the cause."

Business or commercial ability is fundamentally responsible for success in any profession or for the continued existence of educational institutions, even those engaged in the most academic and intellectual lines of work. All rivalry or competition is in reality commercial rivalry or competition, and whether this is carried on fairly or unfairly depends upon the underlying principles of honesty, fair dealing and ethics possessed by the participants.

What are the primary objects of a college education in pharmacy? Is it to produce mental contortionists and star performers who can assimilate syllabi and transform the pabulum into passing marks for registration examinations, or is it to produce worthy, helpful members of the community? If we decide that the latter is preferable, the means must be studied and methods applied which will tend to produce the desired results. I say "tend to," for no idealistic attainment of results will ever be possible. We must work toward a desired end, whether we at first reach it or not.

We must discourage empiricism in scientific work and encourage an interest in and thoroughness of training in principles. Efficiency, success, service, are all factors of value and importance. We must encourage and teach the student to become accurate in his work and in his habits of thought, and if our work is conscientious and thorough, and the student is receptive and interested, we shall have contributed to the community an individual who will be a credit to his work and to his college and who will be a safe and ethical dispenser of extemporaneous medicines, whether they constitute five or fifty percent of his gross sales.

A certain number of the members of any group of young men and women have a natural aptitude and a greater liking for scientific work than for general drug store work. These should be given the necessary post-graduate instruction to enable them to become the neighborhood analysts and bacteriologists, to act as clinical advisers to the physicians of their communities, and should be trained to be helpful even along the broader lines of sanitation and hygiene, so as to give

aid to local health officers when needed. The preliminary education required for the best results should be a minimum of four years of high school work. This requirement should be enacted into the State laws, as has recently been done in the State of Illinois.

Any college of pharmacy with the proper equipment and instructional staff should be able to, and should have the right to teach both of such classes of pharmacists in such numbers as present themselves with properly accredited entrance credentials. That pharmacy is gradually separating into two distinct classes no one will deny. That it has been predicted for years, everybody knows. That it can be brought about over night by resolution, agreement or law, is impossible. Such views savor of Bolshevism, a specious, plausible, irresponsible type of propaganda which has been worrying statesmen for several years, but has not previously appeared in educational discussions.

To accomplish these changes needs more than the fiat of any individual or group of individuals. We cannot effect reform by resolution any more than we can decide scientific questions by a majority vote. Diplomas, degrees and certificates are but "scraps of paper" unless upheld by legislative enactment. Reformers frequently forget that laws are primarily for the protection of the public and not for the development of theories which are impossible to put into practice.

It is in the matter of legislation that we find our greatest stumbling block to rapid progress. Our "pre-requisite" legislation is too recent and not widespread enough as yet, to make such radical changes as would be necessary to effect an immediate sharp separation between drug merchandisers and professional pharmacists, desirable as it may seem in some extreme instances. Economic factors would be ignored, State laws would need to be changed, boards of pharmacy would have to cast aside the traditions and practices of a generation. Doctor Beal has truly said, "Compromise is the price of progress," and with this thought in mind, we should take pains to see that legal restrictions and educational qualifications should be coördinated and drawn closer together, not forced apart.

Looking back, therefore, at the whole subject, it is clear to my mind that any educational institution should be proud of the opportunity of training both pharmacists and druggists, if by druggists is meant the large number of self-sacrificing individuals who, during the recent influenza epidemic, closed everything but their prescription departments so as to devote their entire attention to the pharmaceutical needs of the communities in which they practiced.

The object of an education is that a man may learn to benefit himsef by serving others, one who exemplifies the words applied by our own Dean Remington to a noble deceased pharmacist:

"A man whose soul is pure and strong,
Whose sword is bright and keen;
Who knows the splendor of the fight
And what its issues mean."

PERCENTAGE SOLUTIONS AND ALLIGATION.*

BY H. L. THOMPSON.

There is no one subject which receives such a great amount of discussion as the prescriptions calling for such and such a percent of this or that, and how to go about filling them when one has certain materials on hand.

It would be a very simple matter, if the specifications after percent, %, were written w/w, w/v, or v/v as the case may be. There seems to be little understanding upon these matters, between the physicians who prescribe, and the pharmacists who fill and dispense such prescriptions.

% w/w, percent weight to weight, percent absolute, is a percentage based entirely on the weight of the finished product.

% w/v, percent weight to volume or percentage concentration, is a percentage by weight based on the volume of the finished product.

% v/v, percent volume to volume, is based as a percent by volume on the volume of the finished product.

In all three cases, the percentage solutions are approximately alike for weak percentage solutions, and if water solutions, but not exactly so. This discrepancy is still more pronounced in stronger percentage solutions, especially saturated solutions, and when solvents other than water are used.

For example, consider in the metric system the following problem of a 5% solution of KI, potassium iodide, in water, syrup and alcohol, 5% w/w, 5% w/v, and their possibilities. And for a liquid 5% v/v.

PERCENT, ABSOLUTE.—PERCENT, BY WEIGHT. W/W.

This method is the most accurate, and in the use of the metric system is very simple. It represents Gm. of substance in 100 Gm. of finished product, or parts per 100.

A 5% w/w solution would contain 5 Gm. of substance in 100 Gm. of solution. A 10% solution would contain 10 Gm. in 100 Gm.

There are four ways of making these, two making up to 100, and two having 100 Gm. of solvent.

Thus consider a 5% solution of KI.

To make it take	5 Gm. of KI	or take	5 Gm. of KI
add	95 Gm. of water	add	95 mils of water
total	100 Gm. of solution	total	100 Gm. of solution

If the specific gravity of the solvent is heavier than water, as syrup, sp. gr. 1.313,

take	5 Gm. of KI	or take	5 Gm. of KI
add	95 Gm. of syrup	add	—72.35 mils of syrup
total	100 Gm. of solution	total	100 Gm. of solution

95 Gm. ÷ 1.313 = 72.35 mils of syrup.

If the specific gravity is lighter than water, as alcohol, sp. gr. 0.816,

take	5 Gm. of KI	or take	5 Gm. of KI
add	95 Gm. of alcohol	add	116.4 mils of alcohol
total	100 Gm. of solution	total	100 Gm. of solution

95 Gm. ÷ 0.816 = 116.4 mils of alcohol.

In all these cases the volumes are not 100 mils but vary inversely as the specific gravity of the solvent. With the water solution it is practically about 100 mils, with the syrup about 75 mils, and with the alcohol about 120 mils.

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* Contributed to Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

If one takes 100 mils or 100 Gm. of water and desires to make a 5% sol. by addition of KI, proceed as follows:

100% — 5% = 95% = 100 Gm. of water
1% = 1.053 + 95 = 1.053
100% = 105.3 Gm. of solution
5% = 105.3 — 100 = 5.3 Gm. of KI

Therefore add 5.3 Gm. of KI to 100 Gm. of water to make a 5% solution.

If syrup, to 100 Gm. add 5.3 Gm. of KI,
or use 100 ÷ 0.313 = 76.15 mils of syrup, and add 5.3 Gm. of KI,

If alcohol, to 100 Gm. add 5.3 Gm. of KI,
or use 100 ÷ 0.816 = 122.6 mils of alcohol and add 5.3 Gm. of KI.

In case 100 mils of syrup are used and a 5% w/w solution is desired, 100 × 1.313 = 131.3 Gm. of syrup.

100% — 5% = 95% = 131.3 Gm. of syrup
1% = 131.3 ÷ 95 = 1.382
100% = 138.2 Gm. of soln.
5% = 138.2 — 131.3 = 6.9 Gm. of KI to be added.

Therefore add 6.9 Gm. KI to 100 mils of syrup to make it 5% w/w.

In case 100 mils of alcohol are used and a 5% w/w solution is desired, 100 × 0.816 = 81.6 Gm. of alcohol.

100% — 5% = 95% = 81.6 Gm. of alcohol
1% = 81.6 ÷ 95 = 0.859
100% = 85.9 Gm. of sonl.
5% = 85.9 — 81.6 = 4.3 Gm. of KI to be added.

Therefore add 4.3 Gm. of KI to 100 mils of alcohol to make it 5% w/w.

In all the above cases we have the absolute percentage, parts in grammes per 100 grammes, everything based on weight, even if the solvents are measured.

If the other systems of weights or measures are used, I prefer to change them to the metric equivalents, and then go back, for more accurate and scientific work is done in the metric system than any other system, as I will attempt to show later. In practice, I usually use the metric system exclusively.

PERCENTAGE CONCENTRATION. PERCENT WEIGHT TO VOLUME. % w/v.

By this method is understood to mean Gm. per 100 mils making solutions up to 100 mils.

Let us likewise consider the 5% w/v KI solution.

Proceed as follows: if water is the solvent,

take 5 Gm. of KI
add water enough to to make 100 mils.

If syrup, sp. gr. 1.313, disregard the sp. gr.,

take 5 Gm. of KI
add syrup enough to make 100 mils.

If alcohol, sp. gr. 0.816, likewise disregard the sp. gr.,

take 5 Gm. of KI
add alcohol enough to make 100 mils.

This method of making percentage solutions is preferred by physicians and pharmacists because of the teaspoonful doses, solids being weighed and liquids measured.

Unless the specific gravity of the finished product of the different percentage solutions and the solvents is known, it is impossible to base percentage concentration % w/v upon a given 100 mils of solvent and the desired substance to it.

The above three cases do not take into account the specific gravity of the solvent; only that sufficient diluent is added to the weighed substance to make it up to 100 mils.

VOLUME PERCENTAGE. PERCENT BY VOLUME. % v/v.

By this is meant mils per 100 mils of solution.

To make a 5% v/v spirit of chloroform, take 5 mils of chloroform and add 95 mils of alcohol.

To make a 10% spirit of a volatile oil, from 100 mils of solvent,

100% — 10% = 90% = 100 mils of alcohol

100% = 100 ÷ 0.90 = 111.1

111.1 — 100 = 11.1 mils of volatile oil to be used.

This method is usually used by physicians and pharmacists, when all liquids are measured, regardless of their specific gravity.

In the above discussion the mil of water is practically considered as weighing 1 Gm., and the rule mils × sp. gr. = Gm. is usually considered the best for temperatures from 15° C. to 25° C.

Again, I repeat, that where real precise and accurate work is desired use the metric system, and make percentage solutions weight to weight.

From the study of the above problems, it is apparent how complicated it must be to use other systems as the apothecary fluidounce, and avoirdupois weights, when making up percentage solutions, because of another discrepancy in the understanding as to whether 1 fluidounce of water is to be taken as weighing 456.3, 455.7, 454.6 at 4° C., 15° C., or 25° C. Practically, they say no harm is done, yet is the solution really accurate?

It has been my experience to fill prescriptions for several physicians where percentage solutions were to be based on weight, but the majority of the physicians desire the percentage solutions to be based by weight to volume for solids, and volume to volume for liquids. One physician stated than when I filled a prescription of his calling for a 4% solution of silver nitrate that each fluidounce should contain 20 grains of silver nitrate, basing his calculations on the fluidounce as equal to 500 minims.

The old adage "a pint is a pint the world around" should be forgotten. Too many pharmacists and physicians confuse ounce apothecary and fluidounce apothecary, and then complicate it still more by adding the % sign, when they desire percentage solutions.

I have had the peculiar experience of seeing a pharmacist when filling a prescription calling for 1 fluidounce of a saturated solution of potassium iodide base it on the weight of an ounce, saying one fluidounce weighs 437.5 grains, and then using the avoirdupois drachm of 27.34 grains as drachms of 60 grains.

Thus 1 part of KI is soluble in 0.7 part of water and equals 1.7 parts of solution. Then 1.7 parts = 437.5, 1 part = 1/1.7 of 437.5 = 257.4 grains. 257.4 ÷ 60 = 4.289, or 4.3 drachms. Then in filling the prescription calling for the one ounce of saturated solution of KI use 4 drachms avoirdupois and 10 grains (total 130 grains) and add water to make one fluidounce, and actually dispensing it as a saturated solution. If a pharmacist performs such a blunder as above, whether ignorantly or on purpose, it is no wonder that physicians, surgeons, dentists, and even veterinarians, desiring to get results from the medicines they prescribe, lose faith in the profession of pharmacy, and estimate it of little or no value, and really doubt our accuracy in the art of dispensing, when the same is performed by the pharmacists that do know.

Is there no remedy for this? Can not physicians, dentists, veterinarians, and pharmacists come to a better understanding and adopt a certain method of writing and filling percentage prescriptions?

As a suggestion to a possible solution of this problem, the percent absolute, % w/w, is the most accurate one, and will cover all desired cases of amounts. It is used exclusively in Continental Europe.

But in Great Britain and the United States solids are preferred to be weighed and liquids measured. Therefore, would it not be a good plan to adopt the system required and ordered in the departments of Army and Navy, Marine Hospital Service, and Public Health, that in their work to use the metric system exclusively, expressing solids in grammes and liquids in cubic centimeters. If this rule of weighing solids and measuring liquids in the metric system exclusively were adopted, then we could say that any percentage solution called for would mean % w/v in the case of solids, and % v/v in the case of liquids, the solids being weighed, the liquids being measured, and the whole made up to the desired finished volume.

And lastly, this method would easily give the dose per teaspoonful, which is really of great importance to the physician.

Thus, 120 Cc. of a 7.5% solution of ammonium chloride, NH_4Cl, in syrup would contain $120 \times 0.075 = 9.0$ Gm. of NH_4Cl, and enough syrup added to make 120 Cc. or mils. One teaspoonful = 4 Cc., then $120 \div 4 = 30$ teaspoonfuls. $9 \div 30 = 0.3$ Gm. of NH_4Cl, the dose per teaspoonful.

A CORRECTION TO BE APPLIED TO PERCENTAGE SOLUTIONS.

In the problems, the solids and the liquids were assumed to be 100% pure. If they are not the use of alligation simplifies the process. However, the problems can be solved by percentage and ratio and proportion.

If volumes contract it is preferable to weigh the substances.

Rule. Divide the amount figured on the 100% pure basis by the real percentage expressed in its decimal fraction and use this amount of substance. Then make up to the required number of Gm. or mils, as the case may be for % w/w, % w/v, or % v/v.

Or apply Alligation, Rule III (which see).

Thus, how much 95% sulphuric acid will be necessary to make 100 Gm. of 10% acid?

10% of 100 Gm. = 10 Gm.

10 Gm. $\div$ 0.95 = 10.53 Gm. of H_2SO_4

100 — 10.53 = 89.47 Gm. of water if 10% w/w,

or make up to 100 mils if 10% w/v is desired.

95 10 x or 10.52 19 : 2 : : 100 : x x = 10.52

or 10

0 85 y or 89.49 19 : 17 : : 100 : y y = 89.49

95 z 100

If a stated amount of diluent is given, proceed likewise. Thus how much liquefied phenol 87% must be added to 500 mils of water to make a 5% solution?

500 $\times$ 0.95 = 526.3 mils of finished product

526.3 $\times$ 0.05 = 26.315 mils of liquefied phenol

526.3 — 26.32 = 499.98 or 500 mils

87 5 x 26.3 82 : 5 : : 500 : x x = 26.3

or 5

0 82 y 500.0

87 z 526.3

See alligation.

Under corrections to be applied to percentage solutions, mention was made of mixtures of different percentages. The six following rules of alligation will cover all such cases, whether solids or liquids, provided percentages are based on absolute percent, by weight.

Alligation is the short cut of the rule of three or ratio and proportion. In counter distinction to objections, raised, if those mixtures, solids or liquids are mixed by weight, the best and most reliable method, the allegation is very simple and exact.

ALLIGATION MEDIAL.

RULE I.—Given various amounts (two or more) of ingredients with their corresponding values; to find the value of the result when these are mixed, proceed as follows:

1. Multiply the amount of each ingredient by its value;
2. Add the values of these products;
3. Add the amounts of ingredients, or parts;
4. Divide the sum of the products by the sum of the amounts of the ingredients or the sum of the parts, as the case may be.
5. The quotient is the value of the mixture.

NOTE.—This rule is always used to prove Rules II, III, IV, V, and VI.

Example I:

Given 20 Gm. of 80%, 20 Gm. of 36%, 480 Gm. of 6% acetic acids. What will be the value of the mixture of these acids?

$$\begin{array}{rrr} 80 \times & 20 = & 1600 \\ 36 \times & 20 = & 720 \\ 6 \times & 480 = & 2880 \\ \hline & 520) & 5200(10 \\ & & 5200 \\ & & \hline \end{array}$$

ALLIGATION ALTERNATE. USED IN ALL THE REMAINING RULES.

RULE II.—Given the values of two ingredients; to find the parts to be used of each ingredient, one of which is higher and the other of which is lower than the desired intermediate value, proceed as follows:

1. Draw a vertical line.
   (*a*) To the left of this line, place the value desired;
   (*b*) To the right of it, the values of the ingredients;
2. The value of the stronger ingredient minus the desired value equals parts to be used of the weaker ingredient.
3. The desired value minus the value of the weaker ingredient equals parts to be used of the stronger ingredient.
4. Total the parts.
5. Simplify the parts, and the total, so that the ratio and proportion can be easily applied.
6. Prove results by Rule I.

Example II:

In what proportions may 95% and 20% sulphuric acids be mixed to make 50% sulphuric acid?

$$\begin{array}{rrrrrrrrrrrrrrr} & 95 & & 39 & \text{or} & 6 & \text{or} & 2 & & \text{Proof} & 95 & \times & 2 & = & 190 \\ 50 & & & & & & & & & & & & & & \\ & 20 & & 45 & \text{or} & 9 & \text{or} & 3 & & & 20 & \times & 3 & = & 60 \\ & \text{—} & & \text{—} & & & & & & & & & & & \\ & 75 & & 15 & & & & 5 & & & & & 5 &) & 250 \quad (50 \end{array}$$

RULE III.—To find the amounts of stronger, weaker or total, when one of these is given, when the desired intermediate value is given, and the values of the stronger and the weaker ingredients are known, proceed as follows:

1. Apply Rule II.
2. Opposite parts, place x, y, z.

x = parts of stronger ingredient.
y = parts of weaker ingredient.
z = total parts in mixture.

3. Place the known amount opposite its proper value, and part in place of x, y, or z, as the case may be.

4. Then find the other unknowns by ratio and proportion.

5. Prove by Rule I.

Example III*a:*

Given 200 Gm. of 30% HCl. How much water must be used to make it 10%, and what is the total amount of the finished product?

30	10	1	x	=	200	Proof:	30	×	200	=	6000		
10													
0	20	2	y		400		0	×	400	=	0		
—	–	–			—				—		—		
30	3	z			600				600	)	6000	(	10
											6000		
											—		

1 : 2 : : 200 : y or y = 400.

Therefore to 200 Gm. of 30% add 400 Gm. of water to make 600 Gm. 10%.

Example III*b:*

Given 500 Gm. of water. How much sulphuric acid 75% must be added to it to make 25%, and what is the weight of the finished product?

75	25	1	x		250	Proof:	75	×	250	=	18750		
25													
0	50	2	y	=	500		0	×	500	=	0		
—	–	–			—				—		—		
75	3	z			750				750	)	18750	(	25
											1500		
											—		
											3750		
											3750		
											—		

2 : 1 : : 500 : x or x = 250.

Therefore, to 500 Gm. of water add 250 Gm. of 75% acid to make 10% acid, and the finished product weighs 750 Gm.

Example III*c:*

In what proportions must 28% ammonia water and water be mixed to make 560 Gm. of 10% ammonia water?

28	10	5	x		200	Proof:	28	×	200	=	5600		
10													
0	18	9	y		360		0	×	360	=	0		
—	–	–			—				—		—		
28	14	z	=		560				560	)	5600	(	10
											5600		
											—		

14 : 5 : : 560 : x or x = 200.

z — x = y, or y = 360.

Therefore, 200 Gm. of ammonia water 28% and 360 Gm. of water must be mixed together to make 560 Gm. of 10% ammonia water.

RULE IV.—Given the desired total amount of ingredients and its value, and the amount of one ingredient and its value, to find the amount of the other ingredient and its value to produce the above total amount and its value, proceed as follows:

1. Multiply the desired total amount by its value;

2. Multiply the amount of the ingredient given by its value;

3. The product of the total amount by its value minus the product of the amount of the given ingredient by its value, equals the product of the amount of the other ingredient and its value.

4. The total amount minus the amount given equals the amount of other ingredient needed.

5. The product of the other ingredient and its value divided by the amount of other ingredient needed equals the needed value of the other ingredient.

6. Prove by Rule I.

Example IV:

How many grammes of belladonna and of what value, must be added to 50 Gm. of 1.2% belladonna to make 500 Gm. of 0.3% belladonna?

0.3	×	500	=	150.0	Proof:	1.2	×	50	=	60.0			
1.2	×	50	=	60.0		0.2	×	450	=	90.0			
x	)	450	=	90.0				500	)	150.0	(0.3		
										150.0			

x = 90.0 ÷ 450 = 0.2%.

Therefore, 90 Gm. of 0.2% belladonna must be added.

RULE V.—Extension of Rule II, where there are more than two ingredients.

1. (*a*) If an even number of values, pair off the values, one higher with one lower than the desired value.

(*b*) If an odd number of values, link one value with two others, the stronger with two weaker, or one weaker with two stronger, as the case may be.

2. Place opposite each value, the difference between the value to which it is linked and the desired value, always keeping the values of the parts positive.

3. Total the parts.

4. Simplify the parts.

5. Prove by Rule I.

Example V*a*:

In what proportions may 6.5%, 5.0%, 3.0% and 2.5% cinchonas be mixed to make 3.5% cinchona?

	6.5	0.5	1		Proof:	6.5	×	1	=	6.5			
	5.0	1.0	2			5.0	×	2	=	10.0			
3.5													
	3.0	3.0	6			3.0	×	6	=	18.0			
	2.5	1.5	3			2.5	×	3	=	7.5			
		6.0	12					12	)	42.0	(3.5		

or

	6.5	1.0	2	13.0									
	5.0	0.5	1	5.0									
3.5													
		1.5	3	9.0									
	3.0	3.0	6	15.0									
	2.5	6.0	12	)42.0(3.5									

Example V*b*:

How may 35, 25, 20, 10 and 5% substances be mixed to make 15%?

(I).

	35	5	1	35
	25	5	1	25
15	20	10	2	40
	10	20–10	6	60
	5	5	1	5
		55	11	)165(15

(II).

	35	5	1	35
	25	10	2	50
15	20	5	1	20
	10	20–5	5	50
	5	10	2	10
		55	11	)165(15

(III).

	35	10	2	70
	25	5	1	25
15	20	5	1	20
	10	10–5	3	30
	5	20	4	20
		55	11	)165(15

(IV).

	35	10	2	70
	25	10	2	50
15	20	5	1	20
	10	5	1	10
	5	20–10	6	30
		60	12	)180(15

(V).

	35	10	2	70
	25	5	1	25
15	20	10	2	40
	10	10	2	20
	5	20–5	5	25
	60		12	) 180(15

(VI).

	35	5	1	35
	25	10	2	50
15	20	10	2	40
	10	20	4	40
	5	10–5	3	15
	60		12	) 180(15

RULE VI.—Extension of Rule III to cover all cases of more than two ingredients. If known amounts of ingredients and their values are given, or a fixed amount of the desired intermediate value is sought, to find the amounts of other ingredients needed and the total amount of product produced, proceed as follows:

1. Apply Rule I for known quantitites with known values, if more than one is given, and use the result as one ingredient with a known value.
2. If the total amount desired is given apply Rule IV.
3. Apply Rule II, or Rule V, as the case may require.
4. Total the parts.
5. Simplify the parts.
6. Use x, x′, x″; y, y′, y″ and z;
   x, x′, x″, etc., representing the stronger ingredients,
   y, y′, y″, etc., representing the weaker ingredients,
   z, representing the total.
7. Substitute the known amounts opposite their proper values and parts, and solve for x, x′, etc., y, y′, etc., and z by ratio and proportion.
8. Prove result by use of Rule I.

Example VI*a:*

How much water must be added to 40 Gm. 80%, and 200 Gm. 56% acids to make an acid 20%?

80	×	40	=	3200				60	20	1	x	=	240
							20						
56	×	200	=	11200				0	40	2	y		480
									–	–	–		
		240	)	14400	(	60			60	3	z		720

Proof:

60	×	240	=	14400			
0	×	480		0			
		720	)	14400	(	20	
				14400			

Therefore 480 Gm. of water must be used.

Example VI*b:*

How much of 5% and 10% acid may be added to 420 Gm. of 50% acid to make it 25%, and what amount of product will be made?

	50	15	+	20	=	35	7	x	420
25	10					25	5	y	300
	5					25	5	y′	300
						85	17	z	1020

Proof:

50	×	420	=	21000			
10	×	300	=	3000			
5	×	300	=	1500			
		1020	)	25500	(	25	
				2040			
				5100			
				5100			

7 : 5 : : 420 : y, or y = 300.

Therefore, 300 Gm. each of 5% and 10% acid may be added to 420 Gm. of 50% acid, and the total amount of the product will be 1020 Gm. of 25% acid.

Example VI*c:*

How much 95% and 50% sulphuric acid must be added to 380 Gm. of water to make it 25%?

	95	25		5	x	100		Proof:	95	×	10	=	9500	
25	50	25		5	x′	100			50	×	100	=	5000	
	0	25–70		19	y	=380			0	×	380	=	0	
		145		29	z	580					580	)	14500	(25
													1160	
													2900	
													2900	

19 : 5 : : 380 : x, or x = 100.

Therefore, 100 Gm. each of 95% and 50% acid may be added to 380 Gm. of water to make it 25%, and the total amount will be 580 Gm.

Example VI*d*:

How much 80%, 60% and 30% alcohol may be used to make 1000 Gm. of 50% alcohol?

	80		20	1	x′	250		Proof:	80	×	250	=	20000	
50	60		20	1	x′	250			60	×	250	=	15000	
	30	10 +	30	2	y	500			30	×	500	=	15000	
			89	4	z	1000					1000	)	50000	(50

Therefore 250 Gm. each of 80% and 60% alcohols, and 500 Gm. of 30% may be used to make 1000 Gm. of 50% alcohol.

Example VI*e*:

Given 250 Gm. 4%; 100 Gm. 10%; 50 Gm. 16% materials; how much 9, 11, 13, 17 and 18% substances of the same kind may be used to make 1400 Gm. of 12%. Let the substance be opium.

1. Rule I.

4	×	250	=	1000	
10	×	100	=	1000	
16	×	50	=	800	
		400	)	2800	(7% = value of given materials

2. Rule IV.

7	×	400	=	2800	
?	×	1000	=	14000	
12	×	1400	=	16800	= 14% value to be obtained from the other ingredients, and this must total 1000 Gm. which with the 400 Gm. of 7% will make the 1400 Gm. of 12%.

Rule V.		9	3		y″		150
4.		11	4		y′		200
5.	14	13	4		y		200
6.		17	5		x′		250
7.		18	3	+ 1	x		200
		20			z	=	1000

8. Rule I. Proof:

8	×	250	=	1000			
9	×	150	=	1350			
10	×	100	=	1000			
11	×	200	=	2200			
13	×	200	=	2600			
16	×	50	=	800			
17	×	250	=	4250			
18	×	200	=	3600			
		1400	)	16800	(12		
				1400			
				2800			
				2800			

Therefore, to 250 Gm. 4%, 100 Gm. 10%, and 50 Gm. 16% opium, which in all makes 400 Gm. 7% opium, in order to make 1400 Gm. of 12% opium, there must be added 1000 Gm. of 14% opium, and this latter can be made by mixing together 150 Gm. of 9%, 200 Gm. of 11%, 200 Gm. of 13%, 250 Gm. of 17%, and 200 Gm. of 18% opium.

This last problem will be seldom met with, but really shows how such a difficulty can be solved. I have had occasion to use such problems in actual practice, in the manufacturing and dispensing of preparations.

DEPARTMENT OF PHARMACY,
UNIVERSITY OF NEBRASKA.

OFFICIAL NAMES FOR SYNTHETIC DRUGS.

To the Editor:

It is important that pharmacists should be familiar with the official names for synthetic drugs so far adopted by the Federal Trade Commission. These are:

Arsphenamine for salvarsan, diarsenol and arsenobenzol, etc.
Neoarsphenamine for neosalvarsan, neodiarsenol and novarsenobenzol, etc.
Barbital for veronal.
Barbital-sodium for medinal and veronal-sodium.
Procaine for novocaine.
Procaine nitrate for novocaine nitrate.
Phenylcinchoninic acid for atophan.

Under the authority of the Trading with the Enemy Act and with the advice of the Subcommittee on Synthetic Drugs of the National Research Council, the Federal Trade Commission has provided for the manufacture in this country of the important synthetic drugs which before the war were imported from abroad, chiefly from Germany.

To insure the production of the synthetic drugs urgently needed, the Federal Trade Commission had to make it worth while for manufacturers to undertake the preparation of these articles without permitting their cost to become prohibitive but rather approaching the prices current before the war. This was accomplished by granting licenses good for the life of the patents under which such drugs are made and thus making a permanent investment for their production profitable. Partly to insure for manufacturers a market for their products after the war and in large part inspired by the idea of encouraging the establishment of a permanent American industry in these important articles, the Commission wisely decided that American houses should be put on the same footing as the foreign houses for the after-the-war competition by imposing on all licenses the obligation to use new, official names for the articles, names which after the war will be open to all competitors, domestic and foreign.

Obviously if these names are once in common use the exclusive rights of the foreign houses and their agents of using after the war the old established trademarked names will not seriously handicap the American firms, and all competitors will be on the same footing, with the advantage only to those who can produce most cheaply the better article.

It is obvious that the American physician in final instance is the arbiter who can put this wise plan into operation and establish the new names firmly by prescribing these remedies by their new official names. However, *the adoption of these names by physicians will depend very largely on the pharmacist's familiarity with them.* Unless the physician is confident that the pharmacist to whom his prescription is taken is familiar with the official names, he will feel constrained to use the old, proprietary names. The pharmacist, therefore, should familiarize himself with the new, official non-proprietary names given at the beginning of this letter.

Yours truly,

JULIUS STIEGLITZ, *Chairman*,
SUBCOMMITTEE ON SYNTHETIC DRUGS
NATIONAL RESEARCH COUNCIL.

UNIVERSITY OF CHICAGO,
CHICAGO, ILL.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

DETROIT.

The first meeting of the 1918–19 season of the Detroit Branch, A. Ph. A., was held October 23, at the Wayne County Medical Building, with Prof. E. R. Jones, the new president, in the chair.

Miss May Strawn, the secretary, having left the city, Fred Ingram was elected to fill the vacancy.

Hugh Craig, director of advertising of the Nyal Company, gave a talk on "YEAST, a substance much needed in business." He defined yeast by giving a meaning to each of the five component letters:

Yourself
Economy
Attraction
Service
Thought

By putting *yourself* in your business, making your store reflect your own individuality, exercising *economy* in buying, selling, and store management, making your store *attractive* to customers by pulling windows, interior display, and occasionally changing the internal arrangements; rendering *service*, not servitude; and taking time to give real constructive *thought* to your business, Mr. Craig showed us that we put leaven in our business that is bound to make it rise. His stimulating talk would have benefited every retailer in the city.

This talk impels us to urge every pharmacist in the city to attend these meetings regularly. They are free, open to all, and every one who comes learns something that, properly adapted, brings him additional monetary profit.

This talk was discussed over doughnuts and cider. Many valuable ideas were brought out. Every one contributed his share.

FRED INGRAM, *Secretary*.

NOVEMBER MEETING.

After a dinner at the Fellowcraft Club, President Jones called the meeting to order at 8.30 P.M., forty being present.

A letter of greeting from E. G. Eberle was read and placed on file.

Mr. Grommet, Chairman of the Program Committee, outlined his plans for the season and asked for suggestions regarding having a social evening with the ladies present.

Mr. Hall, to formally bring the matter up, moved that we have a social evening at which the ladies be present, the program to be arranged by the officers. Supported, carried.

It was also moved and supported that a dinner precede each of our monthly meetings. Carried.

Henry Kraemer, professor of Pharmacognosy at the University of Michigan and ex-president of the American Conference of Pharmaceutical Faculties, was then introduced. He stated that the present war situation compelled an introspection into the condition of our profession, particularly since Surgeon General Gorgas, of the Army, had declared, regarding the establishment of a Pharmaceutical Corps, that pharmacy was a non-essential specialty. To ascertain for us the facts which caused Doctor Gorgas to make that statement, Doctor Kraemer sketched the prevailing condition of the retail drug business, the part most accessible to the outsider, and asked if pharmacy as now practiced in the majority of cases would inspire a belief among ourselves or outsiders in its essential status.

Dr. Kraemer's endeavor is to create the ideal type of pharmacist who, he said, was the professional type including the manufacturer, the scientist, and the prescriptionist.

The Technical High School can be made part of the program by serving to train men for pharmacy who can be used in stores as helpers and, if ambitious, they would then go on

in the profession, eventually attending the university type of schools.

In order to bring about this contemplated regeneration it is necessary for the boards of pharmacy to have more power. A man with no education or training can practice pharmacy by merely passing the State Board. He asserted that a preliminary education should be a requirement in order to produce men of real professional standard.

He then showed us slides of various drug store window displays which might lead anyone to question the essential status of pharmacy as practiced to-day.

This was followed by portraits of the pioneers and leaders in our profession, among them Pasteur, Gingnard, Reiss, Flückiger, Hanbury, Schlotterbeck, Prescott and Stevens, men who believed in pharmacy and have been recognized as high class professional men. In closing he stated that there was need of more such leaders and he urged that we all think and act.

Mr. Seltzer, in the discussion which followed, expressed his sympathy with Doctor Kraemer's ideals. In order to bring them about, he stated, it was necessary to secure the reform through the legislature, and therefore we must appeal to the people to convince them of its necessity.

Mr. Webster stated it was necessary to see the druggists on the general proposition, since the opposition to the last "prerequisite" bill came from the druggists themselves.

Mr. Weaver said that the need for trained men is greater now than ever, and that educated pharmacists will be considered essential as they show themsevles worthy.

Mr. Mann feared that druggists lacked the courage of their own convictions, he said that most of them want higher standards but will not work to secure them. It is up to us as pharmacists to bring this about, just as the medical profession raised their own standards and thereby increased their professional standing.

Doctor Kraemer at this point mentioned the official recognition of pharmacy in the Students' Army Training Corps.

Mr. Schettler briefly sketched the development of his career. Originally making most of his galenicals, the lower prices of the manufacturing pharmacists eventually caused him to largely abandon this practice. The separation of commercial from professional pharmacy would be the solution. On the other hand, it takes little professional skill to compound most of the prescriptions as written by physicians to-day.

Mr. Hall urged a faithfulness to our ideals, to our ambition for better pharmacy and that we inspire enthusiasm for our ideals in our employees.

Mr. Mason stated that he did not deplore the advent of commercialism, and that we have not gone down hill. He said he was certain that Geo. B. Evans, the leading commercial druggist, takes considerable pride in his prescription department and has many practical innovations in that department that merit imitation.

He believed that the professional pharmacy is gradually being developed. Economic conditions are responsible for the present status and the pendulum will no doubt swing back from extreme commercialism in due time. He agreed with Doctor Kraemer in the division of pharmaceutical education into two schools, one to train men to run drug stores, the other to train professional pharmacists. Evolution, not revolution, will bring about the desideratum, he said.

Doctor Stevens believed evolution would solve the problem; without blaming the druggist for the existing conditions, he felt that we were not elevating our standards by the types of pharmacies existing to-day.

Mr. Rohnert said a highly trained man is not needed to run the average drug store, and that it would be a mistake to make the standards too high.

W. L. Scoville said that such a complex matter deserves a great deal of consideration. Some commercialism is necessary in every profession. How is this thing looked at on the outside? That is the ladder on which we must climb.

Hugh Craig believed it best to have both kinds of pharmacy in one store. Both kinds can be cleansed and improved. The professional side must not be submerged but should be emphasized, developed and better regulated by the boards of pharmacy.

There were further discussions by Messrs. Bye, Blome, Moore and Buzzell.

It was moved, supported and carried, that our December meeting be advanced one week.

It was moved, supported and carried that Frederick Stearns & Co. be given a vote of thanks for their kindness in extending to us the use of their lantern and operator for this meeting. Carried.

It was moved and supported that Doctor Kraemer be given a rising vote of thanks for his good and interesting talk. Carried.

The meeting adjourned at 11.45 P.M.

FRED INGRAM, JR., *Secretary*.

CHICAGO.

The ninety-eighth monthly meeting of the Chicago Branch of the American Pharmaceutical Association was held at the City Club, Wednesday evening, November 20th, with forty members and visitors in attendance.

The meeting was preceded by a dinner. Vice-President Clark presided.

Minutes of the previous meeting having been published were approved without reading.

William Gray reported for the Membership Committee that sixty-five new members had been received during the year ending September 1, and that sixteen members had been lost, two of these, Louis C. Deck, of Girard, and F. C. Shapper, of Chicago, by death. Since September 1, seven new members have been received and three lost by death, namely, Dr. Carl Lutz, of Ottawa, Messrs. Chas. Fuller and Fred M. Schmidt, of Chicago. The total membership is now two hundred.

Representatives of all the pharmaceutical organizations centered in Chicago were present and entered into the subject of the evening: "What Has Organized Pharmacy Done in the War? What Are the Pharmaceutical Reconstruction Problems?"

The great work of the N. A. R. D. being accomplished through Secretary Henry and Counsel Eugene Brokmeyer at Washington was recognized. Pharmacy has given ungrudgingly of her young men to the Service, many thousands of them, and now the problems of restoring these men to their former places in business and professional life are before us. In Mr. Brokmeyer, the retail druggist has a man right on the ground and, backed up by the great organization behind him, ready to take advantage of every opportunity for the betterment of conditions in retail pharmacy. There is good prospect that the great stringency of competent help in drug stores will soon be relieved by the return to civil life of many pharmacists from the military and naval forces.

The A. Ph. A. has provided for a committee to look after the needs of pharmacists returning from the war forces. This committee, headed by F. H. Freericks of Cincinnati, has outlined its plans under a broad scope and a very comprehensive questionnaire will soon be presented to every retail pharmacist, by which information will be sought as to pharmacists and assistant pharmacists in the military or naval service, and as to providing places in the drug business for these men upon their return. The committee also plans to look after the completion of their pharmaceutical education and to provide special facilities for their registration. The committee desires to work with committees from State and local organizations so that there may be a personal touch given to the work.

Secretary Wm. B. Day referred to Chairman Hilton's report on the status of the pharmacist in the Army and Navy. He stated that, even though the formation of a pharmaceutical corps in the Army had not so far been accomplished, with the ending of the war and a better understanding of the wishes of the pharmacists by the leading medical officers of the Army, the prospects for obtaining such a corps were not dead by any means. He urged that every effort be brought to bear upon Congress to bring about this much-desired result. The A. Ph. A. has purchased liberally of Liberty Bonds from its funds.

The C. R. D. A. was represented by President Umenhofer who summarized the war activities of this strong local organization as follows: Every member of the C. R. D. A. responded to the request of the Red Cross that prescriptions for dependent families of soldiers and sailors be filled without charge, or at actual cost. There are stores where more than sixty of such prescriptions have been filled and not a single druggist has rendered an account to the Red Cross for reimbursement. The C. R. D. A. War Fund, instituted through Mrs. Walgren, a veteran of the Spanish-American War, has grown to a considerable size, and is being disbursed to needy pharmacists in the Service and to sick and disabled pharmacists who have returned from the front. The Woman's Organization of the C. R. D. A. has charge of these disbursements. C. R. D. A. members rendered a marked service in connection with the great War Exposition by selling more than 100,000 entrance tickets. This service was highly appreciated by the War Exposition Committee. C. R. D. A. members are systematically assisting in the sale of War Savings Stamps and many members have volunteered as Liberty Bond salesmen. The C. R. D. A. has purchased Liberty Bonds from its own funds and the purchases of these bonds by the individual members will average very high. The number of C. R. D. A. members in the Service is approximately 140.

Mrs. J. H. Riemenschneider spoke for the Woman's Organization of the C. R. D. A.

Among their activities she mentioned: An active interest in the Sunbeam League of the Red Cross; more than 500 books to the War Libraries; 55 pairs of woolen socks knitted for pharmacist soldiers from yarn purchased by their organization; the sale of $67,100 of Fourth Liberty Loan Bonds; purchase of Liberty Bonds by the organization and by every member of the organization so that their chapter was 100 percent. Their service flag has twenty blue stars.

The Chicago Drug Club, represented by President Otto Mentz, has thirteen members in the Service and also thirteen sons and daughters. The members are most thankful that no gold stars need be added to their flag. The Club has subscribed for Liberty Bonds.

Mr. Christensen, speaking for the National Association of Boards of Pharmacy, stated that their organization had purchased Liberty Bonds.

The Chicago Veteran Druggists' Association was represented by E. Von Hermann, who read a letter from Secretary Bodemann. Mr. Bodemann stated that from their membership of thirty, there were nine blue stars, representing nine sons or grandsons in the Service, and two gold stars. The organization has purchased Liberty Bonds and given to the Red Cross. Despite the fact that a large proportion of their members are German-born or of German parents, nothing but the finest loyalty to our country has ever been expressed in their meetings and no quarrels or harsh words have been spoken there.

Fred Elsner spoke for the I. Ph. A. Travelers' Association. He stated that while they never had a free balance in their treasury, it was because they drew such large drafts for maintenance of the morale of the war-stricken retail druggists.

By special request, Dr. Bernard Fantus responded for the A. M. A. Secretary Simmons, of the A. M. A., upon being asked what he considered as the most valuable service of the A. M. A. in the war, replied, "the keeping of quacks and incompetents out of the Medical Corps." Their card index of every practicing physician and surgeon of the United States had been freely consulted by the Surgeon General's office. An endeavor had been made to leave, in every community, as many physicians as were really needed. Of the 81,000 members of the A. M. A., 33,884 are in the Service. Many have been killed and wounded.

Doctor Simmons also stated that the American Medical Association favored a well-trained pharmaceutical corps for the Army. He believed that the chief reason for the Surgeon General's ruling against the establishment of such a corps was the lack of standard educational qualifications for pharmacists.

Prof. W. B. Day, speaking for the U. of I., School of Pharmacy, stated that an incomplete list of alumni in the Service totalled 110, and that under-graduates of last year's classes were in Service, while of this year's classes 70 were in the Students' Army Training Corps.

The following motions were adopted:

"That the Chicago Branch, A. Ph. A., assembled in regular meeting at Chicago, November 20th, endorse the plans of the Advisory Committee of the American Pharmaceutical Association for Soldier and Sailor Pharmacists as outlined in communications from Chairman Freericks and reviewed by Member H. C. Christensen.

"That a committee of three members of the Chicago Branch be appointed by the Chairman to coöperate with the Advisory Committee of the American Pharmaceutical Association for Soldier and Sailor Pharmacists.

"That the Chicago Branch respectfully request the Department of Education and Registration of Illinois to include in the form for renewal of certificate to be mailed to pharmacists and assistant pharmacists the following question:

'Are you or have you been in the military or naval service of the U. S.? If so, what Branch and Unit?'

"That Article 10 of the By-Laws be amended by striking out 'Friday' and substituting therefor 'Tuesday' so that Article 10 will read 'Meetings—Meetings shall be held on the third Tuesday of each month, except during the months of June, July, August and September, etc.'"

E. N. GATHERCOAL, *Secretary.*

NEW YORK.

The November 1918 meeting of the New York Branch of the American Pharmaceutical Association was called to order by President Turner in the lecture hall of the New York College of Pharmacy Building, on Monday evening, the 11th, at 8.30 o'clock.

There were fifty members present.

The regular order of business was changed at the request of Dr. Royal S. Copeland, Commissioner of the Department of Health, who

gave an address on "The Present Epidemic and the Work of the Health Department."

It was now moved, seconded and carried that the privilege of the floor be extended to all present. There followed a discussion by Dr. Runyon, Mr. M. Zagat, Dr. Diner, Dr. Hostmann, and Dr. Anderson. A rising vote of thanks was then tendered Dr. Copeland.

Progress of Pharmacy.—Dr. Diekman, because of the late hour, brought in no report.

This completed the Scientific Session.

BUSINESS SESSION.

Because of the late hour the reading of the minutes was dispensed with.

Treasurer's Report.—The Treasurer's report was read and ordered accepted.

Committee on Fraternal Relations.—Dr. Lascoff brought in no report.

Audit Committee.—Dr. Diner brought in a report which was ordered accepted.

Committee on Education and Legislation.—Mr. Lehman brought in a report which was discussed by Dr. Rehfuss and ordered accepted.

Membership Committee.—An application from Mr. Kenneth A. Bartlett, care of E. R. Squibb & Sons, Brooklyn, N. Y., was received for membership in the Parent Organization and the following three applications for membership in the Local Branch:

Mr. Emil Roller, 574 Amsterdam Ave., New York City; Eugene L. Maines 245 Quincy St., Brooklyn, N. Y.; Chas. H. Stocking, 3 Park Place, New York City.

The death of Dr. Niece was reported. Appreciations of Dr. Niece were delivered by Dr. Mayer and Mr. Mayo. It was moved, seconded and carried that a committee be appointed to draw up suitable resolutions. The committee consisted of Dr. Mayer, Mr. Mayo and Mr. Bigelow.

Dr. Lascoff and Mr. Fisher discussed the Ambulance Committee's work.

Under regular procedure the meeting was declared adjourned.

HUGO H. SCHAEFER, *Secretary.*

PHILADELPHIA.

The regular monthly meeting of the Philadelphia Branch of the American Pharmaceutical Association was held at the Philadelphia College of Pharmacy, Monday evening, November 18, with President W. W. McNeary in the chair. The usual business matters were dispensed with, due to the lengthy program, and after the election of three new members, E. G. Eberle presented a report of the annual convention of the American Pharmaceutical Association. This was done comprehensively and with the speaker's usual thoroughness and tact. J. C. Peacock then read a concise but interesting report of the Pennsylvania Association's successful meeting. The National Wholesale Druggists' Association was represented by Dr. Adolph Miller, whose very enjoyable report is usually looked forward to each year by Branch members. Elmer Hessler briefly reviewed his trip to the Annual Chemical Exposition exhibited in New York, and spoke of the resourcefulness of the Yankee chemist. The main topic of the evening was then opened with the reading of a paper by Dean Charles H. LaWall, who characteristically termed his essay:

"BOLSHEVISM IN AMERICAN PHARMACY."

Attempting to summarize this paper is out of the question; it is to be published in the JOURNAL of the Association. It is well worth careful perusal and digestion. Dealing as it does with the question of the separation of the professional from the commercial, it treats of a present-day problem that is not only confronting the educators, but also every retail druggist or pharmacist in the country. The title is undoubtedly well chosen when one considers the most recent definition of the Bolsheviki—individuals whose heads are in Arcadia and their feet still on the old terrestrial sphere.

Following Professor LaWall's able paper, Doctor Sturmer delivered one of his careful and analytical speeches. He dealt particularly with the effect of the war on American pharmacy and very dramatically pointed out that the pharmacists who had remained behind had "kept the home fires burning bright." Pharmacy still prospers, even if there was a disposition in Washington to ignore it. Attention was called to the reliance placed upon pharmacists in Philadelphia's hour of trouble when the grim reaper came so suddenly and demanded such a heavy toll, and it is not said that they were at all lacking in their duties as public servants. Doctor Sturmer stated that pharmacy can look to the future with confidence and that, despite opposition and apathy, it will in due course establish itself firmly with its sister professions, all of which had to find their place in the sun only after a tedious evolutionary process that required decades for its consummation.

Samuel C. Henry, of Chicago, and an honorary member of the Branch, was a welcome

visitor and expressed his gladness at being back with his friends in his usual sincere fashion. The topic of the evening was keenly discussed by a number of the members. Doctors Lowe and Bernstein, Messrs. Peacock, Cliffe, Hunsberger, and Beringer, were particularly prominent in stating their views on the question. The latter four members were able to present views which were peculiarly interesting in that they are four retail pharmacists whose business acumen, as well as their high professional rating, is beyond questioning.

The meeting adjourned at 11.15 and was undoubtedly highly instructive and interesting.

IVOR GRIFFITH, *Secretary.*

COMMITTEE REPORTS

REPORT OF COMMITTEE ON THE U. S. PHARMACOPOEIA, AMERICAN PHARMACEUTICAL ASSOCIATION.*

It has been exceedingly difficult to secure observations, criticism or suggestions from the various members of the committee. The reasons therefor are probably due to the present disturbed conditions, not only in United States, but the world over. There are, however, submitted herewith a number of observations, suggestions and criticism which it is believed will be of service in the working out of the 10th decennial revision of the U. S. Pharmacopoeia.

The question of ash content in drugs should receive careful investigation. This material finds its way into the whole and powdered drugs through various avenues. Some of the plants are grown in sandy soil and the silicious matter may be greatly augmented by the simple, mechanical adherence of the sandy matter. The nature of the drugs is sometimes such as to make it very difficult to remove the inorganic matter from the plants either at the time of gathering or subsequently. In many instances the ash content varies greatly with the nature and character of the soil in which the plants are produced. The ash content of the same drugs grown in the same field often varies materially. It is believed all of these factors should be carefully worked out, from the commercial, botanical, analytical and other points of view. It is not believed that with our present limited knowledge very much dependence can be placed upon ash limitations.

The present standard for maximum ash content for rhubarb is 13%. Excellent specimens of whole rhubarb have been met with containing very much higher percentage of ash. In the case of powdered drugs the miller is sometimes looked upon with suspicion when there is really no foundation for such a suspicion and every effort should be made to correct questioned standards, which would tend to reflect unjustly upon manufacturers and dealers.

CANNABIS INDICA: The present physiological method contained in the Pharmacopoeia for testing *Cannabis Indica* has been subject to repeated criticism. A detailed criticism has been referred to the Committee on Revision. It is believed that the question should receive very careful and thorough consideration.

CREOSOTE: Manufacturers have repeatedly complained relative to the so-called glycerin test for the alleged detection of "coal-tar creosote" in creosote. The point raised was that this test discriminates against the American-made creosote in favor of imported product. It is believed that this criticism should be carefully investigated and, if found correct, the test should be modified.

Several members of the committee have made suggestions and criticism which are submitted as received and are as follows:

H. ENGELHARDT.

ACETUM SCILLAE: This preparation should be omitted because it is therapeutically not sufficiently active.

ACID BENZOIC: A more definite test for distinguishing between the natural and synthetic acid should be given.

ACID HYDRIODIC: The residue left after evaporating and incinerating 5 mils of the acid is not potassium carbonate as is usually accepted but is potassium iodide which volatilizes when too high a heat is applied. Therefore it should be stated that the heating should be carried out only at dull redness.

* Presented at Chicago meeting American Pharmaceutical Association, 1918.

ACID LACTIC: In the assay process it is stated that a certain amount of the acid be poured into a tared and stoppered bottle. How can this be done? The phraseology should be changed.

ACID PHOSPHORIC: It would be advisable to change the assay process which is a very cumbersome one.

ACID SALICYLIC: More definite tests for distinguishing between natural and synthetic acids should be given.

ACID SULPHURIC AROMATIC: The assay process given in the Pharmacopoeia is wrong. It would be advisable to adopt the process published by Penniman and Randall in the *Jour. Indus. & Eng. Chemistry* for October 1916.

ACONITINE: Physiological test of the alkaloid should be given because commercial samples vary very widely in toxicity.

ACONITE AND ITS PREPARATIONS: The assay process should be thoroughly revised as the chemical results are not in proportion to the physiological results. It is impossible to obtain a definite end point when using cochineal as indicator. Methyl red therefore should be used, by which results are obtained which indicate the toxicity of the drug better than the results obtained with cochineal.

CANNABIS: If physiological tests for this drug and its preparation are to be retained a reliable method should be given. The present method gives results which are far from satisfactory.

CAPSICUM: We have found that in some years it is impossible to obtain 15% of ether-soluble oleoresin from the average commercial drug. The drug seems to be subject to considerable seasonal variation.

CODEINE AND ITS SALTS: Why is only an assay process for Codeine Phosphate given and not for the alkaloid and the sulphate?

CRESOL: Commercial cresol is not always soluble in 60 parts of water.

DIGITALIS: The physiological assay method should be revised and the one-hour frog test preferably be replaced by the 12-hour frog or still better by the cat method.

EMETINE HYDROCHLORIDE: The U. S. P. states that emetine hydrochloride contains variable amounts of water. A properly prepared salt contains about 7 molecules of water of crystallization which would correspond to the 19% of moisture permitted by the U. S. P.

F. E. PODOPHYLLUM: A standard should be given.

F. E. SQUILL: The manufacturing method should be revised. A detailed paper on this subject will be submitted by Messrs. Grantham and Colson at the Chicago meeting of the association. (Printed in November issue of the JOURNAL, p. 940.)

MERCURY SALICYLATE: The assay process might well be simplified. It can be carried out by treating a weighed amount of the sample with sulphuric acid and nitric acid and titrating the solution thus obtained with potassium sulphocyanide as directed under mercury.

LINIMENT OF CAMPHOR: The limits of the requirements are too narrow considering the difficulties which are encountered in the assay process.

LIQUOR ARSENIC AND MERCURY IODIDE: It has been stated that the arsenic in the arsenous state is easily oxidized into arsenic in the arsenic state. It would therefore be advisable to make in addition to the estimation of the arsenous arsenic a determination of the total arsenic.

LIQUOR CRESOLIS COMPOUND: A method for the estimation of the water in the preparation should be given since this preparation comes under the Insecticide Act which requires a statement of the inert ingredients, in the preparation.

HYDROGEN PEROXIDE: A method for estimating the acidity should be given. By the present method only one-half of the acidity is estimated.

LIQUOR POTASSIUM ARSENITE: The total arsenic in Fowlers Solution should be estimated in addition to the estimation of arsenous arsenic. Under certain conditions an oxidation of the arsenous arsenic to arsenic is liable to occur.

MAGMA BISMUTHI: The electrolytical process should be given as an alternative method. By simply evaporating a definite quantity of the magma to dryness and weighing the residue, soluble salts present in the preparations are estimated also.

OLEATE OF MERCURY: An assay process should be given.

OLEORESIN MALEFERN: An assay process should be given.

PANCREATIN: The milk test should be omitted.

PODOPHYLLIN: More details of the assay method should be given.

POTASSIUM CHLORATE: Why is test for nitrites and nitrates omitted?

QUININE AND ITS SALTS: Kerner's test as given in the U. S. P. for foreign cinchona alkaloids is too lenient.

RESIN JALAP: Details for estimating the solubility in ether and chloroform should be given.

SODIUM PHOSPHATE: The assay process is very cumbersome.

SPARTEINE SULPHATE: Assay process should be given.

SPIRIT AMMONIA AROMATIC: The alkalinity should be determined.

STROPHANTHIN: Physiological assay method should be given.

STRYCHNINE AND ITS SALTS: Assay methods should be given.

SYRUP OF IPECAC: Why is acetic acid added when the fluidextract already contains hydrochloric acid?

SYRUP OF SQUILL: Why not make this preparation with fluidextract of Squill?

TINCTURE IODINE: The percentage of alcohol is given at 83%, while theoretically it is 87%.

TINCTURE GINGER: Standard for total solids should be more definitely stated.

UNGUENTUM HYDRARGYRI: Considering the difficulty experienced in making this ointment the limits for required percentage of mercury should be extended.

E. P. BIGELOW, SUMITTED BY E. H. LAPIERRE.

Impurities in Potassium Carbonate and Bicarbonate.

Recommendations for additional U. S. P. tests.

During the past twelve years the writer has had occasion, as a matter of routine, to examine a great many samples of high grade Potassium Bicarbonate and for several years many samples of Potassium Carbonate also, and the requirements for the purity for these salts as given in the U. S. P. both 8th and 9th revisions have been found inadequate.

The purchaser of products conforming to the U. S. P. standards should at least expect to be safeguarded against the possibilities of *dangerous* impurities; nevertheless, such is not the case as regards $KHCO_3$ or K_2CO_3. These dangerous impurities have been found in K_2CO_3 prepared before the War under normal conditions of production and manufacture as well as in that now produced and on the market. Traces of these impurities have been occasionally found in $KHCO_3$.

The requirements of the B. P. on the other hand are more stringent as regards these two salts and with few exceptions are open to but little criticism. For this reason it is to the advantage of the manufacturer to specify B. P. instead of U. S. P. when purchasing K_2CO_3 or $KHCO_3$.

Based on the writer's experience the most objectionable impurities not provided for in the U. S. P. are as follows:

1. ARSENIC: This has been found in high grade calcined K_2CO_3 in amounts varying from 10 parts per million to as high as approximately 100–200 parts per million, and possibly even in larger amounts, as the total quantity was not always determined. Certainly an excessive figure, and as K_2CO_3 is often used in medicinal preparations the presence of such a product would be fraught with much danger.

Arsenic has been found in $KHCO_3$ in *traces* only and then usually in the powdered salt. Some hydrated K_2CO_3 tested showed 10 parts per million. The British Pharmacopoeia (see U. S. Dispensatory, 20th Ed., page 894) limits the arsenic content in K_2CO_3 to 2 parts per million and in $KHCO_3$ (page 883) to 5 parts per million. The only test in the U. S. P. at all applicable is the "Time Limit Test" for heavy metals, which is entirely inadequate for arsenic in such quantities. The writer uses a modified Marsh method with a preliminary treatment of the product with HNO_3 and H_2SO_4.

2. CYANIDE COMPOUNDS: These may be present in Potassium Carbonate (or possibly bicarbonate) prepared by the Leblanc process in which coal containing appreciable amounts of nitrogen is employed, or from any source where the ignition of nitrogenous matter takes place during the process. Cyanide compounds have been found in quite a number of

samples of high grade calcined K_2CO_3 and in a few cases in appreciable amounts. Preliminary tests indicated ferrocyanide. One sample of a poor grade contained KCN. No cyanides have been found in the samples of $KHCO_3$ examined.

The British Pharmacopoeia allows no characteristic reactions for cyanides in K_2CO_3, and Merck, "Chemical Reagents, Their Purity and Tests," 1914, page 129, provides a test for KCN in K_2CO_3. Krauch, "Testing of Chemical Reagents," 3rd Ed., on page 225, also gives a test for KCN in K_2CO_3.

The writer employs a modified Prussian blue test which is accurate and sufficiently delicate (except in the presence of chlorates). The test is as follows: Introduce 1.8 Gm. of calcined K_2CO_3, or 2.8 grammes of $KHCO_3$, into a dry test tube, capacity about 40 mils. Add 0.100 Gm. powdered ferrous sulphate (or more if necessary), mix, and next add 4 mils distilled H_2O and 0.5 mil 10% NaOH in the case of the K_2CO_3 and 2 mils 10% NaOH and $3^1/_2$ mils H_2O in the case of $KHCO_3$. Then in both cases mix well, put in water-bath (temp. 140–160° F.) and allow to remain about 10 minutes, occasionally shaking to insure complete solution. Next add to each tube 2 drops 10% $FeCl_3$, mix and at once add enough conc. HCl to render solution slightly acid (add acid very cautiously to avoid loss from effervescence), usually takes about 2.8 to 3 mils.

Examine tubes for[1] greenish coloration or precipitate, comparing with pure control and one containing a known amount of KCN. Then allow to remain for a few hours or over night, filter through a Whatman No. 44, 11 cm. "wetted" filter, wash with water and examine for traces of blue residue of ferric ferrocyanide. This test readily detects 0.00004 Gm. KCN in K_2CO_3 and 0.0001 Gm. in $KHCO_3$.

The addition of dry powdered ferrous sulphate or the dry sample in the test tube, before adding the alkaline hydroxide solution and water, prevents any interference from sulphur compounds sometimes present in K_2CO_3. It is very essential that the test should be filtered, otherwise traces of the blue precipitate are apt to escape detection. The presence of chlorates renders the test unreliable.

3. SULPHOCYANATES: KCNS has been found very frequently in calcined and hydrated K_2CO_3 in amounts varying from 0.01% to as high as 0.09%. Traces have been found in $KHCO_3$.

4. CHLORATES: This impurity may be present in K_2CO_3 or $KHCO_3$ prepared from electrolytic KOH. It has been found in amounts varying from traces up to 0.12% as $KClO_3$. It was detected chiefly in powdered $KHCO_3$ and calcined K_2CO_3.

Among the less objectionable impurities are the following:

1st. Sulphides. Found in traces in $KHCO_3$ and in calcined K_2CO_3. Sometimes in appreciable amounts in hydrated K_2CO_3.

2nd. Nitrites. Found frequently in samples of Japanese (so called) K_2CO_3 in slight amounts.

3rd. Iodides. Found in a number of samples of K_2CO_3. Possible source Kelp Ash.

4th. Ammonium Salts. Found occasionally in samples of $KHCO_3$, usually in powdered product.

5th. Sodium. Almost always present in amounts varying from traces to as high as 10–12% (as Na_2CO_3) in K_2CO_3, and from bare traces up to 7% (as $NaHCO_3$) in $KHCO_3$.

Such samples containing less than 99% pure product would of course not conform to the U. S. P.

6th. Sulphates, Chlorides, Phosphates. Frequently present in K_2CO_3. Chlorides, also, usually present in $KHCO_3$.

7th. Nitrates. Occasionally present in K_2CO_3.

8th. Iron. Almost always present in both $KHCO_3$ and K_2CO_3.

9th. Silica and Silicate. Frequently present in K_2CO_3. Occasionally quite heavy in Japanese K_2CO_3.

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[1] Is blue when washed free from $FeCl_3$.

With the development of new sources of potash, due to shutting off our main supply, there is of course the possibility of additional impurities as well as those previously existing, such as, for example, iodides from potash from kelp ash, nitrites from (so-called) Japanese potash (both mentioned above) and borax in the Searles Lake product.

The Imperial Institute, London, in a bulletin entitled "The World's Supply of Potash," 1915, on page 12, gives the analysis of the salts of Searles Lake brine in California and one of the constituents is Sodium Arsenate, 0.17%. If such is the case there may be possibilities from this source.

The suggested use of Calcium Fluoride in connection with the recovery of Cement Dust Potash may mean the presence of Fluorides in the purified product.

SUMMARY.

From the results of analyses of many samples of potassium carbonate and bicarbonate it seems evident that the following tests should be added to the requirements of the U. S. P.

1st. Suitable tests for Arsenic with limit set for amount allowed.

2nd. Test for Cyanide Compounds.

3rd. Test for Sulphocyanates.

4th. Test for Chlorates.

Tests for sulphides, nitrites, iodides, ammonium salts and other less objectionable impurities mentioned above might be considered advisable.

E. Fullerton Cook: "In making the report of the Committee this year, my only suggestion is with reference to the methods for the next revision. As the work progressed on the U. S. P. IX, we became more and more dependent for conclusions upon personal conferences. Often many decisions were reached in this way in one meeting, which would have required months of correspondence under the usual plan.

I hope that the Committee can point out this advantageous method of conducting the work and would be willing to advocate it as a policy for the next revision."

There is no doubt but that much room for improvement exists as regards methods involved in preparing a revision of the U. S. Pharmacopoeia. A procedure that consumes six years to get out a new revision is entirely too long. The time should be cut in half at least. Various plans for doing this have been suggested. One is, as indicated by Professor Cook, to call together in conference the various members of a sub-committee to consider any vital points involved and determine them by this means rather than by a long, tedious method of correspondence. It has been suggested that a permanent central laboratory, conducted by the Pharmacopoeia committee of revision would materially expedite the work and be productive of excellent results.

Considerable agitation has been abroad relative to the revision being made by the Government. It is held that in view of the fact that the book is the legal standard under the Food and Drugs Act, enforced by Government agencies, the standards should be worked out and promulgated through Government agencies rather than having them delegated to other bodies. Objections obtain relative to this course of procedure because it is believed undesirable to place in the hands of a Governmental Department the formulation of standards of so important a publication as the U. S. Pharmacopoeia represents. Recently a plan has been suggested which endeavors to bridge over the conditions obtaining at present, namely, that the revision be placed in the hands of a committee of five, one from each of the following organizations: The American Pharmaceutical Association, U. S. Department of Commerce, U. S. Treasury Department, U. S. Department of Agriculture and the American Medical Association.

In conclusion the Committee desires to thank all who assisted in the work and regrets exceedingly that the report does not go into greater detail on more subjects.

Respectfully submitted,

L. F KEBLER, *Chairman.*

REPORT OF THE A. PH. A. COMMITTEE ON MODEL FOR MODERN LAWS PERTAINING TO PHARMACY.*[1]

The work of your Committee on Model for Modern Laws Pertaining to Pharmacy has made progress during the year, but it has not been completed. Many suggestions pertaining to detail have been made within the Committee, and also by members of the Voluntary Conference, which, almost without exception, will improve the Preliminary Draft[2] submitted last year, and most of which will undoubtedly be accepted by the Committee. The more important and newer provisions have been widely discussed in pharmaceutical journals, at State meetings and otherwise, but in the opinion of the Committee they require even further discussion, criticism and suggestion for improvement before they are finally adopted. Some difference of opinion exists with reference to some of the features, which deserve every consideration. It has been decided that as briefly as possible we at this time submit the features upon which there has not been full agreement or regarding which further helpful advice is desired. We solicit the widest discussion on the following proposals contained in the Preliminary Draft:

1st. It is proposed in the Preliminary Draft to place the enforcement of all laws governing pharmacy and the drug business with the State Boards of Pharmacy under the direct supervision of a Drug Commissioner who is to be an appointee of the Board of Pharmacy. It will be noted that this makes the Board of Pharmacy a very powerful institution. Apart from the practical difficulties of enactment which need not be discussed here, the objection is raised that the Board of Pharmacy should be an Examining Board only, and that the enforcement of laws governing the pharmacist and the druggists should rest with other State Departments because other than pharmacists and druggists are also controlled by such laws and for the further reason that the enforcement will be more impartial. Those who favor complete control by a Drug Commissioner under the supervision of the Board of Pharmacy contend that only practical pharmacists can decide upon the correct enforcement of pharmacy and drug laws, and they further contend that the public welfare requires a greater and more general appreciation of the importance of pharmacy which with such intended authority for the Board of Pharmacy is given public expression.

2nd. The authority and standing of the Assistant Pharmacist are much drawn into question. The Preliminary Draft proposes, apart from general education, that an applicant for registration as Assistant Pharmacist should have either two (2) years of practical experience in pharmacy or in the alternative one (1) year of such practical experience and one (1) year of college work, and that he may be in charge of a pharmacy for not more than one (1) day each week. It is proposed that the requirements shall be either two years of practical pharmacy work or two years of college work, and then the far more important proposal is made that the Assistant Pharmacist shall be permitted to conduct a pharmacy without time restriction or limitation so long as a Registered Pharmacist has complete supervision which is not to be measured by the day or the week, but one (1) Registered Pharmacist at least being required for every pharmacy. The argument is advanced, that the Assistant Pharmacist should be given a higher standing with greater rights, this tending to increase the number of assistants, and to decrease the number who desire to conduct pharmacies of their own. In support the contention is made that if an Assistant Pharmacist is qualified to conduct a pharmacy for five (5) minutes, or for a day, he would be qualified to conduct it without any time restriction.

3rd. The Preliminary Draft proposes that the physician, dentist or veterinarian who would compound and dispense his own medicines shall show his qualification to practice pharmacy but would allow those who now are compounding and dispensing their medicines to continue to do so by registration without examination; only those who would newly so engage to be required

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* Read before Section on Education and Legislation, A. Ph. A., and the Joint Session with the American Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy, Chicago Meeting, 1918.

[1] For the convenience of the members reference is made to the prior report of the Committee, April issue of the JOURNAL, pp. 385–393, and also to reports of the Voluntary Conference to Draft Modern Laws Pertaining to Pharmacy: Volume IV, JOURNAL A. PH. A., pp. 640 and 1431; Volume V, p. 1360; Volume VI, pp. 29 and 38.—EDITOR.

[2] See April JOURNAL A. PH. A., pp. 385–393.

to take an examination before the Board of Pharmacy in the theory and practice of pharmacy such as Assistant Pharmacists are required to pass. Specific exemption is made for doctors, etc., to provide drugs in cases of emergency which are administered to the patient in their presence. That the physician who would practice pharmacy should show qualification is very generally approved, but the objection is raised that legislation of the kind is unobtainable because of medical opposition. It is urged that organized medicine will never agree that a physician should in any respect be under the control of the Board of Pharmacy. Those who urge the need for such legislation say that the objection in part can be met by having the examination in pharmacy conducted by a Board of Pharmacy member, under the supervision of the Medical Boards. They contend that the needs for public safety should be the only consideration, and that the public through its legislature will be the first to demand such qualification when it learns that it does not now exist.

4th. The Preliminary Draft would accept as a fact that when a person has qualified as a Pharmacist, he remains so until the end of his day. It would do away with term re-registration, and in its place it would provide for the annual registration of all pharmacies. The objection is made that this does not enable the Board of Pharmacy to have accurate information regarding all within the State who are authorized to practice pharmacy, and the objection is further raised that a man, though registered as a Pharmacist, who has not practiced pharmacy for ten or twenty years, should not again be permitted to do so without first proving that he has retained his qualification to act as such.

5th. The Preliminary Draft would positively restrict the distribution at retail of all drugs, medicines and poisons to persons who are registered, either as pharmacists, physicians, dentists or veterinarians and drug dealers, with the sole exception that drugs and poisons intended for agricultural, technical or industrial use, may be sold by others. The objection is raised, that no such exception should be made, and that if it is made, it would throw open the doors again for general distribution by unqualified persons. Having in mind that the intended law provides for the registration of drug dealers in districts where there are no registered pharmacists, the question is, whether such exception with reference to the sale at retail of drugs and poisons for agricultural, technical or industrial use is really necessary for public convenience.

6th. The Preliminary Draft provides a definition for Poisons and for Potent Drugs, and further provides that under the definition it shall be the duty of the Board of Pharmacy to name and publish lists of all poisons and potent drugs, these to include all so-called proprietary medicines which are found to contain what under the law would be a Poison or a Potent Drug, and it is then further provided that all such poison or potent drug content shall be shown on the label in ready-made medicines, and in the case of a physician's prescription either when filled by the pharmacist or when filled by the physician himself, shall be kept in the form of a prescription record, or in the alternative be shown on the label. Possibly no other single provision meets with more strenuous objection on the part of some and with equal strenuous approval on the part of others. Those who object to it say that it means merely a formula disclosure, that it is destructive of property rights and without compensating public benefit; those who favor the provision contend, first of all, that it is primarily for the public welfare. They say that it is frequently desirable and necessary for third persons to know what the active ingredients of a medicine may be. They advance the argument that no physician should be allowed to keep as his sole secret, without possible means of knowledge on the part of third persons, what strong drugs he may have dispensed and, from their point of view, it follows of necessity that no proprietary medicine manufacturer should be allowed to place in the hands of the consuming public what may be the most active of drugs, without some means of third persons knowing, both in case of emergency and in case of the ordinary matter of giving advice. Those who favor this partial formula disclosure contend that it is not destructive of property rights, because method of manufacture and content of non-potent drugs will give sufficient protection against competitive misuse.

We beg at this time to again point out that we understand the mission of this Committee to be the presentation of a Draft which includes what reasonably ought to be a part of up-to-date laws pertaining to pharmacy. We do not believe that we should propose the unattainable, but neither do we believe that we should omit a needed present-day requirement simply because the first impression may be that its legislative enactment can not be secured.

In conclusion we beg to urge upon pharmaceutical journals and upon pharmaceutical conventions, as well as the individual pharmacists, to help us with a free expression of opinion regarding the six proposals which are specially referred to herein, and which we again would briefly state as follows:

1st. Shall the enforcement of all laws governing pharmacy be placed with the State Board of Pharmacy under the direct supervision of a Drug Commissioner?

2nd. Shall the authority and standing of the Assistant Pharmacist as such be materially increased?

3rd. Shall the physician who would practice pharmacy be required to prove his qualification as a pharmacist?

4th. Shall the pharmacist be relieved of re-registration, and shall there be an annual registration of pharmacies?

5th. Is it advisable to provide for an exception under which drugs and poisons for agricultural, technical or industrial use may be sold at retail by unqualified dealers?

6th. Should a modern law include a provision requiring that the poison or potent drug content of ready-made medicines be shown on the label, and that such poison or potent drug content in medicines prepared on physician's prescriptions be evidenced either by a written prescription or by record which the dispensing physician is required to keep?

Respectfully submitted,

WILLIAM C. ANDERSON,
H. V. ARNY,
JAMES H. BEAL,
CHAS. H. HUHN,
FRANK H. FREERICKS, *Chairman.*

REPORT OF THE SPECIAL COMMITTEE ON REGULATIONS FOR TRANSPORTATION OF DRUGS BY MAIL.

Your Committee begs to report that no steps have been taken during the past year by us or by any other organization to enact legislation on the transportation of drugs by mail. The war and conditions arising from it have so overshadowed this subject that quite properly no efforts along this line have been made. The mailing of drugs is still subject, therefore, to the original rulings of the Post Office Department, which depend on laws and regulations that are several years old. They have already been discussed by this Committee and their undesirable features made known to you. Let us continue to devote our full energies to winning the war, returning to the consideration of this subject when victory is ours.

Respectfully submitted,

B. L. MURRAY,
Chairman.

REPORT OF THE GENERAL MEMBERSHIP COMMITTEE.

TO THE PRESIDENT AND MEMBERS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION:

The work of the General Membership Committee during the past year has been conducted along the usual lines. Special efforts have been made in Illinois on account of the convention being held in Chicago. In Minnesota, also, Dr. F. J. Wulling and Prof. E. L. Newcomb made a very earnest effort to secure new members which brought excellent results, while New York and Pennsylvania have more than kept up their usual quota of new members.

Although on the whole, the number of new members shows an increase over preceding years, yet a glance over the appended statement will indicate many localities where membership work has lagged. The pressure of the conditions created by the war is largely responsible for this, and it is hoped that with the coming of brighter times a strong impetus will be given to the work of the Membership Committee throughout the country and that the Association may experience a rapid growth.

NEW MEMBERS ELECTED SEPT. 1, 1917, TO SEPT. 1, 1918, AND GROUPED BY STATES AND MEMBERSHIP DISTRICTS.

District No. 1.		District No. 2.		District No. 3.		District No. 4.	
Connecticut	2	New Jersey	7	Illinois	65	Alabama	3
Maine	0	Virginia	8	Ohio	16	Arkansas	3
New Hampshire	0	West Virginia	1	Indiana	11	Cuba	5
Vermont	0	New York	74	Kentucky	2	Florida	10
Massachusetts	10	Maryland	1	Michigan	5	Georgia	0
Rhode Island	0	Dist. of Columbia	4	Wisconsin	3	Louisiana	8
		Pennsylvania	62			Mississippi	7
Total	12	Delaware	1	Total	102	Panama	0
						Oklahoma	3
		Total	158			No. Carolina	0
						So. Carolina	2
						Tennessee	3
						Texas	7
						Porto Rico	3
						Total	54

District No. 5.		District No. 6.		District No. 7.		District No. 8.	
Iowa	5	California	3	Idaho	0	Brit. America	1
Missouri	6	Colorado	3	Oregon	1		
Kansas	2	Nevada	0	Alaska	0	Total	1
Minnesota	46	New Mexico	0	Montana	4		
Nebraska	0	Utah	0	Washington	1	Philippines	1
North Dakota	3					Foreign Country	4
South Dakota	3	Total	6	Total	6	U. S. Navy	2
Total	65					Total	7

Grand Total 411

SUMMARY.

Membership August 15, 1917		2640
Losses from August 15, 1917, to September 1, 1918:		
By suspension	176	
By resignation	164	
By death	28	
In the service and carried on the rolls without dues and without publications by action of the Association	54	
Total	422	
Less members reinstated	15	
Net loss	407	
New members elected August 15, 1917, to September 1, 1917	88	
New members elected September 1, 1917, to September 1, 1918	411	
Total new members	499	
Net gain	92	
Total membership September 1, 1918		2732

Respectfully submitted,

WM. B. DAY,
Chairman General Membership Committee.

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 2.

(*Continued from p. 1009, November issue.*)

Motion No. 1. (*On Coöperation with Bureau of Public Health Service in re Venereal Diseases among the Armed Forces of the United States*): Moved by W. B. Day, seconded by E. G. Eberle, that the above resolutions be adopted.

In the early part of 1918, the Council approved of the selection of a Committee on Research consisting of Messrs. H. V. Arny, G. M. Beringer, J. A. Koch, Henry Kraemer, C. H. LaWall, Fred. B. Power, W. L. Scoville, A. B. Stevens, H. M. Whelpley and Edward Kremers.

This committee was a temporary one and went out of existence after it made its report to a recent annual meeting of the Association, at which time it was decided to establish a permanent Committee on Pharmaceutical Research, the following amendments to the by-laws being made:

"That Article I of Chapter X of the By-Laws of the Association be amended by adding 'a Committee on Pharmaceutical Research,' the article to read, 'There shall be appointed or elected standing committees as follows: A Committee on United States Pharmacopoeia, a Committee on Transportation, a Committee on Resolutions, and a Committee on Pharmaceutical Research, each to consist of ten members, etc.'"

"Also that Article XI be added, to read as follows:

'The Committee on Pharmaceutical Research shall be elected by the Council, two members to serve for a term of five years, two for a term of four years, two for a term of three years, two for a term of two years and two for a term of one year, and after the expiration of the one-year term two members shall be elected annually for a term of five years. The Committee on Pharmaceutical Research shall endeavor to promote research along pharmaceutical lines, and shall advise the Council as to the use of the research funds of the Association.'"

Motion No. 2. (*Nominations for Committee on Pharmaceutical Research*): Moved by Dr. F. E. Stewart, seconded by E. Fullerton Cook, that the following be nominated as members of the Committee on Research to be elected by the Council: Messrs. H. V. Arny, G. M. Beringer, J. A. Koch, Henry Kraemer, Edward Kremers, C. H. LaWall, W. L. Scoville, A. B. Stevens and H. M. Whelpley.

F. B. Power has found it impossible to serve and additional nominations for the committee are asked.

The election will be held later, the two nominees receiving the highest vote will be elected for five year terms, and the next two highest for the four year term, for the three year term, for the two year term and for the first year term, respectively, according to vote.

Please correct the addresses of the following in list given in previous Council Letter (No. 1): [Corrections were made before printing.—EDITOR.]

J. W. ENGLAND, *Secretary.*

415 N. 33rd Street.

A. PH. A. COUNCIL LETTER NO. 3.

PHILADELPHIA, PA., October 8, 1918.

TO THE MEMBERS OF THE COUNCIL:

Motion No. 1. (*On Coöperation with Bureau of Public Health Service in re Venereal Diseases among the Armed Forces of the United States*) and *Motion No. 2* (*Nominations for Committee on Pharmaceutical Research*) have each received a majority of affirmative votes.

Motion No. 3 (*Nomination of George D. Beal for Committee on Research*): Moved by George M. Beringer, seconded by E. G. Eberle, that George D. Beal be nominated for the Committee on Research.

Motion No. 4 (*Adoption of Recommendation of the Committee on Finance of September 23, 1918*): On motion of W. B. Day, seconded by Dr. F. E. Stewart, it is moved that the recommendations of the Committee on Finance of September 23, 1918, contained in Council Letter No. 2, be adopted.

Motion No. 5 (Election of Members): You are requested to vote on the following applications for membership:

No. 1. Mrs. Bertha Rudolph, 1501 Penn Street, St. Joseph, Mo., rec. by H. M. Whelpley and E. G. Eberle.

No. 2. Carl Robert Koeble, 333 Jones Avenue, Burlington, N. J., rec. by George M. Beringer, Jr., and Edgar R. Sparks.

No. 3. Lawrence Zembsch, Asst. Surgeon U. S. Navy, Great Lakes, Ill., c/o Main Hospital, rec. by Wm. B. Day and E. N. Gathercoal.

No. 4. Percy Newell Hall, 22 Elm Street, Westfield, Mass., rec. by Theodore J. Bradley and John G. Godding.

No. 5. George H. Haywood, Osakis, Minn., rec. by E. L. Newcomb and Wm. B. Day.

No. 6. Charles E. Frosst, 17 Forden Avenue, Westmount, Prov. Quebec, rec. by E. F. Kelly and B. Olive Cole.

No. 7. Joseph B. Clower, Woodstock, Va., rec. by Wm. B. Day and W. F. Rudd.

No. 8. George P. Engelhard, 536 South Clark Street, Chicago, Ill., rec. by J. W. England and E. G. Eberle.

No. 9. Palmer L. Foss, Page, N. Dak., rec. by W. P. Porterfield and Wm. B. Day.

No. 10. Boleslaw Roman Kozlowski, 4800 So. Loomis Street, Chicago, Ill., rec. by Frank J. Dubsky and Wm. B. Day.

No. 11. Joseph J. Smailis, 1898 Jos. Campau Avenue, Detroit, Mich., rec. by L. A. Seltzer and A. A. Wheeler.

No. 12. Miguel Sanchez, Media Luna, Oriente, Cuba, rec. by H. M. Whelpley and J. W. England.

No. 13. Philo LaMont Burrin, c/o Eli Lilly & Co., Indianapolis, Ind., rec. by J. E. Seybert and W. B. Day.

No. 14. John H. Nankivell, Captain 157th U. S. Infantry, A. E. F., rec. by Wm. B. Day and J. W. England.

No. 15. Theodore Konzelman, 146 Grove Avenue, Highland Park, Mich., rec. by Leonard A. Seltzer and A. A. Wheeler.

No. 16. Louis Edward Bangert, 1901 Belmont Avenue, Chicago, Ill., rec. by Wm. B. Day and E. N. Gathercoal.

No. 17. Wallace Joseph Formhals, 730 W. Madison Street, Ottawa, Ill., rec. by C. W. Lutz and Wm. B. Day.

No. 18. Hearn Howell Melton, Broad Street, Thomasville, Ga., rec. by R. Thomas and F. V. Eidson.

No. 19. Richard Harris, 383 W. Main Street, Plymouth, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 20. Patrick A. Roan, 159 E. Main Street, Plymouth, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 21. G. Grobelewski, 241 E. Main Street, Plymouth, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 22. Thos. J. Evans, 79 Center Avenue, Plymouth, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 23. Harry C. Hughes, 15 W. Main Street, Plymouth, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 24. George J. Durbin, 139 E. Main Street, Plymouth, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 25. Fred J. Crandall, 217 Lincoln Street, Wilkes-Barre, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 26. John J. Shovelin, 691 E. Northampton Street, Wilkes-Barre, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 27. B. Drapewski, 102 E. Northampton Street, Wilkes-Barre, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 28. Thos. H. Peters, Cary Street, Plains, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 29. George Dupree, Sunbury, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 30. James F. Kane, 6 S. Main Street, Pittston, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 31. Louis L. Filar, 809 N. Washington Street, Wilkes-Barre, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 32. George Gibbons, Jr., 125 Grove Street, Wilkes-Barre, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 33. Edward P. Gannon, 65 Prospect Street, Wilkes-Barre, Pa., rec. by E. L. Owens and J. D. Morgan.

No. 34. Louis William Koch, Greenbush, Minn., rec. by E. L. Newcomb and Wm. B. Day.

No. 35. Arthur Theodore Blomquist, Osaksi, Minn., rec. by E. L. Newcomb and Wm. B. Day.

No. 36. Ira Perkins King, 112 S. Main Street, Stillwater, Minn., rec by E. L. Newcomb and Chas. H. Rogers.

No. 37. Westwood D. Case, Canton, Minn., rec. by E. L. Newcomb and Chas H. Rogers.

J. W. ENGLAND,
Secretary.

415 N. 33RD STREET.

A. PH. A. COUNCIL LETTER NO. 4.

PHILADELPHIA, PA., November 5, 1918.

TO THE MEMBERS OF THE COUNCIL:

Motion No. 3 (*Nomination of George D. Beal for Committee on Research*), *Motion No. 4* (*Adoption of Recommendations of the Committee on Finance*) and *Motion No. 5* (*Election of Members; applications Nos. 1 to 37 inclusive*) have each received a majority of affirmative votes.

Chairman Hopp has appointed the following committees:

Committee on Conservation: Hugo H. Schaefer, *Chairman*, New York; Theo. J. Bradley, Boston; E. Fullerton Cook, Philadelphia; H. A. B. Dunning, Baltimore; and H. C. Fuller, Washington, D. C.

Advisory Committee for Sailor and Soldier Pharmacists: Frank H. Freericks, *Chairman*, Cincinnati; Clarence O. Bigelow, New York; Edward Spease, Cleveland; H. C. Christensen, Chicago; and Charles E. Caspari, St. Louis.

Committee on Drug Store Classification: Jacob Diner, *Chairman*, New York; E. F. Kelly, Baltimore; Dr. F. E. Stewart, Philadelphia; E. Von Hermann, Chicago; and L. A. Seltzer, Detroit.

General Secretary Day writes:

"I desire to offer the following motion which has the approval of the Finance Committee; Professor Koch seconds the motion:

"Moved that an additional appropriation of $150 be made for the budget item for the National Drug Trade Conference.

"In explanation, I would say that it has been necessary to hold a second meeting of the Conference and we will of course have to meet the expenses of our delegates. Our present budget item of $200 is overdrawn thereby."

The above will be known as *Motion No. 6* (*Additional Appropriation of $150 for National Drug Trade Conference*).

The following nominations for the Committee on Pharmaceutical Research were made in Council Letters Nos. 2 and 3: H. V. Arny, G. M. Beringer, George D. Beal, J. A. Koch, Henry Kraemer, Edward Kremers, C. H. LaWall, W. L. Scoville, A. B. Stevens and Dr. H. M. Whelpley.

The election will now be held (voting card enclosed), the two nominees receiving the highest vote will be elected for five year terms, and the next two highest for the four year term, for the three year term, for the two year term and for the first year term, respectively, according to vote.

Motion No. 7 (*Election of Members*). You are requested to vote on the following applications for membership:

No. 38. Louis Gardier, 317 South Main Avenue, Scranton, Pa., rec. by C. H. LaWall and Ivor Griffith.

No. 39. Julia Runkel, 38 S. Dearborn St., Room 643, 1st Natl. Bank Bldg., Chicago, Ill., rec. by Wm. Gray and Wm. B. Day.

No. 40. Josephine Marion Dyniewicz, 1535 N. Hamlin Ave., Chicago, Ill., rec. by E. N. Gathercoal and Wm. B. Day.

No. 41. Hattie Adela Dyniewicz, 1535 N. Hamlin Ave., Chicago, Ill., rec. by E. N. Gathercoal and Wm. B. Day.

No. 42. Charles F. Godlewski, 1800 West 3rd Street, Chester, Pa., rec. by Charles H. LaWall and E. Fullerton Cook.

No. 43. Fred D. Hileman, 482 Carey Ave., Wilkes-Barre, Pa., rec. by Jos. D. Morgan and J. W. England.

J. W. ENGLAND.
Secretary.

415 NORTH 33RD STREET.

A. PH. A. COUNCIL LETTER NO. 5.

PHILADELPHIA, November 9, 1918.

TO THE MEMBERS OF THE COUNCIL:

The following communication has been received by the Secretary of the Council from Frank H. Freericks, Chairman of the Advisory Committee for Soldier and Sailor Pharmacists:

"In behalf of the Advisory Committee for Soldier and Sailor Pharmacists, I am directed by unanimous vote of the committee to request from Council authority for the Committee to accept contributions from the drug trade in order that it may properly carry out its work. Will you have the kindness to submit this matter for a vote to Council, if such be necessary. Time is pressing, and we should like much to get our work under way. When this is submitted for a vote, I personally would also ask that Council authorize me to appoint Mr. Clarence O. Bigelow as treasurer, for the committee, or if he, because of other duties cannot serve, that then I be authorized to appoint one of the other members of the committee as its treasurer.

"In order that the members of Council will have a fair understanding of the situation, I am sending you herewith sufficient copies of an explanatory letter, so as to enable you to furnish every Council member with a copy. May I ask of you the very great kindness to submit this matter at once, if you possibly can."

What is the wish of the Council?

J. W. ENGLAND.
Secretary.

415 N. 33RD STREET.

P. S. The following communication has just been received by the Secretary of the Council from James H. Beal:

"I have just had the pleasure of reading the Circular Letter of the Advisory Committee* of the A. Ph. A., for Soldier and Sailor Pharmacists, and I am heartily in favor of the proposed work set forth in the circular, and offer the following motion:

"1st: That the Council approve of the proposed service to Soldier and Sailor Pharmacists, as set forth in the Circular Letter of the Advisory Committee of November 6th.

"2nd: That the Council hereby authorizes the committee to acceptc ontributions for the purpose of carrying on its work.

"3rd: That the committee be authorized to name its own treasurer to have custody of and to disburse the funds so collected."

The above motion will be regarded as *Motion No. 8 (Authorization of Advisory Committee for Soldier and Sailor Pharmacists)*, it is seconded by E. G. Eberle.

J. W. ENGLAND.

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* The substance of this Circular Letter will be found elsewhere in this issue.—EDITOR.

A. PH. A. COUNCIL LETTER NO. 6.

PHILADELPHIA, November 26, 1918.

TO THE MEMBERS OF THE COUNCIL:

Motion No. 6 (Additional Appropriation of $150 for National Drug Trade Conference, Motion No. 7 (Election of Members: applications Nos. 38 to 43, inclusive), Motion No. 8 (Authorization of Advisory Committee for Soldier and Sailor Pharmacists), have each received a majority of affirmative votes.

The following Committee on Pharmaceutical Research (Council Letters Nos. 2 and 3) has been elected: For five year term—H. V. Arny and C. H. LaWall; for four year term—Edward Kremers and Julius A. Koch; for three year term—Henry Kraemer and George M. Beringer; for two year term—Wilbur L. Scoville and A. B. Stevens; for one year term—Dr. H. M. Whelpley and George D. Beal.

Motion No. 9 (Election of Members). You are requested to vote on the following applications for membership:

No. 44. A. W. Sharping, Arlington, Minn., rec. by E. L. Newcomb and F. J. Wulling.
No. 45. John H. Farlow, Berlin, Md., rec. by W. W. Rose and Wm. B. Day.
No. 46. Orville Andrew Beath, 815 University Ave., Laramie, Wyo., rec. by E. G. Eberle and W. B. Day.
No. 47. Charles F. Fischer, 262 Cornelia Street, Brooklyn, N. Y., rec. by Hugo H. Schaefer and H. V. Arny.
No. 48. Edward A. Wickham, 482 Broad Street, Newark, N. J., rec. by William Mansfield and Edward A. Sayre.
No. 49. Charles Henry Thompson, A. E. C. Hospital, Anchorage, Alaska., rec. by Z. J. Loussoe and Wm. B. Day.
No. 50. Kenneth A. Bartlett, York & Washington Sts., care of E. R. Squibb Co., Brooklyn, N. Y., rec. by Dr. Hugo Schaefer and Mrs. May O. C. Davis.
No. 51. Mrs. John A. Dunn, 329 Stratford Road, Brooklyn, N. Y., rec. by H. M. Whelpley and J. W. England.
No. 52. Mildred Lillian Gilmore, 21 Webster St., Allston, Mass., rec. by J. E. Martel and A. C. Wagner.
No. 53. Fred P. Lehning, 1717 Commercial Ave., Cairo, Ill., rec. by Dr. H. M. Whelpley and J. W. England.
No. 54. Arthur L. Buzzell, 550 Field Ave., Detroit, Mich., rec. by Frank G. Ebner and Harry B. Mason.
No. 55. Ernest Frank Bundy, 177 Jos. Campau Ave., Detroit, Mich., rec. by E. J. Starwalt and F. F. Ingram, Jr.

J. W. ENGLAND,
Secretary.

415 N. 33RD STREET.

COMMERCIAL VIBURNUM BARKS AND PREPARATIONS.

In the November issue of THIS JOURNAL a paper on "Commercial Viburnum Barks and Preparations" was published, the proof of which, through some misunderstanding, failed to reach me, and, through sickness, did not receive the full attention of my coöperators.

The following corrections are desired: The letters B and C in Fig. 1 should be reversed, so that B refers to the Mercury, and C to the Zinc salt. Mercurous nitrate and not mercuric nitrate, as stated, was used in the microchemical experiments. The following additional references to Rusby and Sayre, considered in the manuscript, but not included in the bibliography, will be of interest:

Sayre, L. E., *Am. J. Pharm.*, 67, 387–94 (1895); 68, 225–32 (1896).
Rusby, H. H., *Jour. New York Botanical Garden*, 155– , (1915).
———, J. A. PH. A., 5, 538 (1916); 6, and especially 6409 (1917).

(*Signed*) A. VIEHOEVER,
Pharmacognocist, Bureau of Chemistry, U. S. Dept. of Agric.,
Care of Dept. of Chemistry, Urbana, Ill.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.
Committee on Publication: J. W. ENGLAND, *Chairman;* G. M. BERINGER, CASWELL A. MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on Progress of Pharmacy, *ex-officio.*
Editorial Office: 253 Bourse Building, Philadelphia, Pa.

THE PHARMACEUTICAL CORPS OF THE JAPANESE ARMY.

The pharmaceutical corps of the Japanese Army does considerable manufacturing of tablets, galenical preparations, and such dressings as experience has taught can not be purchased with safety and from stock that may have been on hand for a more or less indefinite period. Part of the corps is the Medical Supply Bureau, which selects and standardizes materials, appliances and apparatus. The bureau is made up of Major-General Masukichi Hata, chief of the Pharmaceutical Corps and some of the higher pharmaceutical and veterinary officers. The bureau does not include medical officers, however, the pharmaceutical corps is part of the Medical Department, but the pharmacist is quite independent of the medical officer.

RESPONSIBILITY OF DRUGGISTS IN SALE OF REMEDIES FOR SELF-TREATMENT OF VENEREAL DISEASE.

The United States Public Health Service has issued *Venereal Disease Bulletin No. 2,* which probably has reached the members. There is no question that there will be a hearty coöperation of the members with the Surgeon General. The following pledge for signature has been sent out:

PLEDGE.

Appreciating the seriousness of venereal diseases among the armed forces of the United States, as indicated by the reports of the Surgeon General of the United States Army, and desirous of doing whatever is requested by the Government in the war emergency, this store hereby pledges its best efforts in cooperating with the United States Public Health Service and all health officials to reduce the venereal disease scourge among civilians, and specifically does it agree:

1. Not to prescribe or recommend any remedy for a venereal disease.
2. After this date not to purchase a "PROPRIETARY REMEDY" to be sold to the public for the self-treatment of a venereal disease, and not to sell any such "remedy" after January 15, 1919.
3. To REFILL only such prescriptions for the treatment of venereal disease as were given originally to the customer by a reputable physician who is still in charge of the case.
4. To cause literature furnished by the Surgeon General to be handed to every person asking, without a physician's prescription, for a remedy customarily confined to the treatment of a venereal disease. Further, to direct the applicant to a reputable physician, to a board of health, or to an approved venereal clinic.

The trade of this store numbers approximately ..... people per week.
(*Name of Store*).....
(*By*).....
(*Street*).....
(*City and State*).....
Date..... 19..

The closing paragraph of the Bulletin reads:

"In directing men and women suffering from venereal diseases along the lines above suggested, druggists of the country will build for themselves a public confidence of great value and at the same time they will know personally that their best efforts are being given toward the elimination of the venereal scourge in their respective communities, both for the best interests of the civilian population and for the greater fighting efficiency of the armed forces of the nation."

The coöperation of the national and state associations has been promised for this effort to eliminate the venereal scourge.

COÖPERATION OF MEDICINE WITH PHARMACY AND CHEMISTRY IS NECESSARY.

That America is the logical country to be the center of medical learning after the war is the opinion of Dr. Frederick Tilney, professor in the College of Physicians and Sur-

geons, Columbia University. After speaking of the changes that had been brought about by the war, the discoveries, and the need of advanced research, he referred to some of the defects in American Medicine. He said:

"The most obvious of these, perhaps, is that we have permitted our vision to become near-sighted and locally introspective. Because of this limited view, we have gained no sense of the possibilities and proportion of our mission; it would even seem that we had no realization of a mission at all. A complacent isolation of the larger medical centers has cultivated an exclusiveness which does not promote mutual understanding or inspire the confidence which engenders the spirit of progress.

"It may be that the first step to secure this end will be a federation of American medical colleges and institutes. A council representative of these institutions would coöperate in the interests of medical education and medical science." * * *

"If the country is to avail itself of the obvious advantages of universal military training after the war, military medicine must be still further developed in the colleges. It seems advisable that permanent courses in military medicine be introduced into the curriculum of medical schools.

"In so large an undertaking the work is not ours alone. The Nation already begins to understand our purposes. When it appreciates the full importance of our relation to its welfare we shall, as a recognized economic necessity, have its liberal support. It is especially necessary in all parts of the country that those who have the interests of medical development in their keeping shall make their efforts decisively constructive."

We are ready to admit the progress medicine has made and the opportunities that lie before it, but the opportunity should be given both to pharmacy and chemistry to coöperate. These are times when related interests should work together for common purposes. At the recent meeting of the New York Section of the American Chemical Society, Dr. Charles H. Herty said: "We are about to enter into a new era for chemistry in this country and the great mass of human energy that has been directed to the destruction of human life is now about to be turned into an agency for its conservation.

"It has been the dream of many prominent chemists in New York and elsewhere to establish a national institute where the chemist could coöperate with the medical profession and the drug trade in producing compounds for the alleviation of human suffering."

It is realized that along the lines of chemistry there is much yet to be discovered and developed. An institution in charge of the best brains in its respective trade or profession, it was pointed out, would be able to achieve beneficial results.

There is opportunity and glory enough for all!

A SHORT-SIGHTED DRUGGIST.

The *Journal of the A. M. A.* comments editorially, under above caption, on the experience and conclusions of a man who bought an N. F. antiseptic for which he paid the price that a related proprietary could be bought for. A comparison of price between the two products justifies the conclusions of the *Journal*, but taken by itself there may be different views relative to the selling price of the article purchased. It must be admitted that there are druggists who do not encourage the dispensing of U. S. P. and N. F. preparations to the extent they should, and such criticism should prove of value. Of course, there are others who are guilty of omissions which might be brought into the discussion, but we will allow the quoted comment to carry a message.

PATRIOTIC PRESCRIPTIONS.

Dr. John Foote in *Nation's Business* says that now is the time for the American manufacturer to intensify his advertising propaganda of American-made chemicals. No similar expenditure in legitimate advertising will bring such results to the advertiser and to national welfare. "Patriotic prescriptions" may to-day well become a slogan of the medical profession.

May we repeat the request in our editorial, that members induce manufacturers to use the JOURNAL OF THE A. PH. A. for their publicity campaign?

DECIMAL COINAGE IN GREAT BRITAIN.

A decimal coinage bill, providing for a rearrangement of the British money system on a decimal basis, has been introduced in the House of Lords by Lord Southwark. The bill is the result of conferences between two great business organizations, the Institute of

Bankers and the Associated Chambers of Commerce. Both organizations gave their support to the scheme by a unanimous vote.

The bill provides for the continuance of the sovereign and the florin, the latter being one-tenth of the sovereign, or pound. A new coin, one-hundredth of a pound, will make its appearance, being practically equivalent to the American nickel. The new farthing will be worth slightly less than the present farthing (approximately one-half cent), being exactly one-thousandth of a pound. Five farthings (instead of four as now) will make up the new penny.

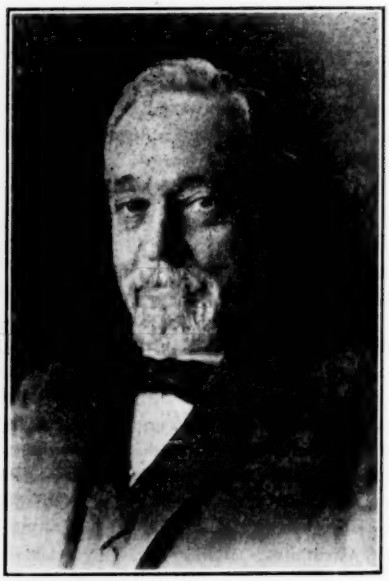
With such strong endorsement the prospects are bright for the passage of the measure, and once Great Britain has decimal coinage one of the great barriers to decimal weights and measures will have been removed. The decimal movement is not swift, but it seems to possess a most encouraging steadiness in the forward direction, and to enlist in its behalf men of intelligence, merit and sound judgment.—*The Valve World.*

Several of the departments of this Section are omitted from this issue on account of the inclusion of the annual index.

OBITUARY.

CHARLES WESLEY SNOW.

Charles W. Snow, vice-president of Gibson-Snow Drug Company, died at his home in Syracuse, N. Y., November 9, at the age of 82 years. The deceased was born at Peterboro, N. Y.; the parents moved to Syracuse when Charles was five years old and here he



Courtesy of *P. O. & D. Reporter.*
CHARLES W. SNOW.

continued to reside. At the age of 15 years, Mr. Snow entered the employ of W. B. Tobey and four years later was admitted to partnership. In 1866 he established the firm of C. W. Snow & Co., which was continued by the consolidation of this firm with Walker-Gibson Co., of Albany, and Gibson Drug Company, of Rochester, in the corporation of Gibson-Snow Drug Company, in 1916.

Mr. Snow was financially and officially interested in several banking institutions and other business organizations and identified with many charitable institutions and civic organizations. He was a 33° Mason; for many years a trustee of May Memorial Church, and a director of the Board of Associated Churches and Charities. He is survived by his widow, a daughter, Mrs. Irving S. Merrell, and a son, Nelson P. Snow.

Mr. Snow joined the American Pharmaceutical Association in 1876.

CHARLES FULLER.

Charles Fuller, vice-president of Fuller-Morrison Company, Chicago, died suddenly, of angina pectoris, while on a visit to the home of his father, Honorary President A. Ph. A., Oliver F. Fuller, who had just returned from a visit to New York. Charles Fuller was born in Peekskill, N. Y., August 12, 1868, where he was educated. After graduation from Peekskill Military Academy he went to El Paso, Texas, where he was engaged in the drug business for several years. Thereafter he returned to Chicago and has since been continuously associated in business with his father. Mr. Fuller married Miss Mary Antoinette Hait, of Peekskill, in 1892, who with two sons survive the deceased. Charles Fuller was a member of the American Pharmaceutical Association, of a number of civic and social organizations, among the latter the Chicago Veteran Druggists' Association, of which his aged father is honorary president.

A grandson of Honorary President Oliver F. Fuller, son of Frank F. Fuller, a Lieutenant in the U. S. Aviation Service, in France, was reported among the missing, September 29. We are indebted for these data to Fra. Wilhelm Bodemann, and express the sympathy of the Association to our honored member and family in these bereavements.

LIEUTENANT COLONEL E. F. HARRISON.

Many of our members may not have recognized in the announcement of his death, November 6, by Associated Press, that Lieut. Col. E. F. Harrison, head of the British Chemical Warfare Department, was the distinguished English pharmacist. He joined the British Army as a private in May 1915, and immediately became connected with the chemistry research bureau. He developed the protective apparatus against gas attacks and the whole organization has lately been in his hands. In this work he displayed brilliant resourcefulness. His death, doubtless, was hastened by his devotion to the work he was engaged in. The Council of the British Pharmaceutical Society passed the following resolution, which speaks of some of his activities as pharmacist:

"That this Council receives with profound sorrow the intelligence of the death of Lieut. Colonel E. F. Harrison, F.I.C., C.M.G., one of the most distinguished graduates of the School of Pharmacy, and a brilliant and consistent leader and worker in pharmaceutical and chemical science. As Bell Scholar, prizeman, demonstrator, investigator, examiner, teacher and adviser his career in pharmacy has been characterized by singular and unvarying excellence, and his services to his chosen profession will rank high in the records of pharmaceutical history. The council recalls with pride the immense value of Lieut. Colonel Harrison's knowledge, experience, and organizing ability to the nation at the crisis of its fate, and with mournful satisfaction records the recognition by His Majesty of those ungrudging and invaluable contributions to the defense of the realm. With the passing of this notable pharmacist the Pharmaceutical Society loses a loyal and able leader, his colleagues an honored associate and his friends a staunch and beloved personality."

LIEUTENANT CARL H. HEEBNER.

Aviator Carl H. Heebner, son of Prof. C. F. Heebner, dean of Ontario College of Pharmacy, and member of the American Pharmaceutical Association, was killed in action and while engaged in battle. Lieutenant Heebner had been shot down three times before the final engagement, but managed on each of these occasions to make his way back to the lines. He was about to be gazetted as captain when he met his untimely end.

HENRY WILSON PEGG.

We have been advised by member John Lohmann, of Kingston, Pa., of the death of Henry W. Pegg. The deceased had been engaged in the drug business with Mr. Lohmann, and he speaks of him as a faithful, honest, conscientious clerk, who had the esteem and friendship of the patrons of the store. Mr. Pegg attended Scio College and later the Pittsburg College of Pharmacy. He joined the American Pharmaceutical Association in 1908.

CLIFFORD O. MILLER.

Clifford O. Miller, chemist of the Maryland State Board of Health, died at his home in Baltimore, October 31, of pneumonia following influenza. The deceased was born in Portsmouth, Ohio, in 1890. He came to Baltimore in 1907 to attend the Maryland College of Pharmacy, from which institution he graduated with high honors, receiving three of the four medals awarded by the college that year.

Dr. Miller became connected with the Maryland State Board of Health in 1913, and had been elected to the faculty of the Maryland College of Pharmacy last summer. He was a member of the Masonic bodies, both in the York and Scottish Rite.

He is survived by his widow, parents and one sister. The deceased joined the American Pharmaceutical Association in 1912.

LOUIS EMANUEL, JR.

Louis Emanuel, Jr., son of Louis Emanuel, member of the American Pharmaceutical Association, died November 4 of pneumonia. The father and mother are frequent attendants of the A. Ph. A. meetings and the former has held membership since 1878.

The deceased was 32 years of age, and was engaged in the drug business at Pittsburg, Pa. He is survived by his parents, wife and a daughter.

The strenuous work and constant attention to serve others during the recent influenza epidemic, exacted a further sacrifice, by death, of many devoted pharmacists.

THE PHARMACIST AND THE LAW.

SECTION 472, POSTAL LAWS AND REGULATIONS.

Sec. 472. 1. All kinds of poison, and all articles and compositions containing poison and all poisonous animals, insects, and reptiles, and explosives of all kinds, and inflammable materials, and infernal machines, and mechanical, chemical, or other devices or compositions which may ignite or explode, and all disease germs or scabs, and all other natural or artificial articles, compositions, or materials of whatever kind which may kill, or in any wise hurt, harm, or injure another, or damage, deface, or otherwise injure the mails or other property, whether sealed as first-class matter or not, are hereby declared to be non-mailable matter, and shall not be conveyed in the mails or delivered from any post-office or station thereof, nor by any letter carrier; but the Postmaster-General may permit the transmission in the mails, under such rules and regulations as he shall prescribe as to preparation and packing, of any articles hereinbefore described which are not outwardly or of their own force dangerous or injurious to life, health, or property: Provided, That all spirituous, vinous, malted, fermented, or other intoxicating liquors of any kind are hereby declared to be non-mailable and shall not be deposited in or carried through the mails. Whoever shall knowingly deposit or cause to be deposited for mailing or delivery, or shall knowingly cause to be delivered by mail according to the direction thereon, or at any place at which it is directed to be delivered by the person to whom it is addressed, anything declared by this section to be non-mailable, unless in accordance with the rules and regulations hereby authorized to be prescribed by the Postmaster-General, shall be fined not more than one thousand dollars, or imprisoned not more than two years, or both; and whoever shall knowingly deposit or cause to be deposited for mailing or delivery, or shall knowingly cause to be delivered by mail according to the direction thereon, or at any place to which it is directed to be delivered by the person to whom it is addressed, anything declared by this section to be non-mailable, whether transmitted in accordance with the rules and regulations authorized to be prescribed by the Postmaster-General or not, with the design, intent, or purpose to kill, or in any wise hurt, harm, or injure another, or damage, deface, or otherwise injure the mails or other property, shall be fined not more than five thousand dollars, or imprisoned not more than ten years, or both.

2. (*a*) Spirituous, vinous, malted, fermented, or other intoxicating liquors of any kind, poisons of every kind, and articles and compositions containing poison (except as prescribed in the fourth paragraph hereof), and poisonous animals, insects, and reptiles, corrosive materials, fireworks, and explosives of every kind, and inflammable materials liable to cause fire by self-ignition through friction, through absorption of moisture, or through spontaneous chemical changes, and infernal machines, any mechanical, chemical, or other devices or compositions which may ignite or explode, and disease germs or scabs (except as prescribed in Sec. 473), and other natural or artificial articles, compositions, or materials of whatever kind which may kill or in anywise hurt, harm, or injure another, or damage, deface, or otherwise injure the mail or other property, live animals, insects, birds or fowls (except as prescribed in Sec. 475), fresh hides or pelts, or any articles exhaling bad odor, whether sealed as first-class matter or not, shall not be admitted to the mails.

(*b*) Inflammable liquids and substances, such as paints, varnishes, automobile tire-repair outfits containing rubber cement, etc., that are not liable to cause fire by self-ignition through friction, through absorption of moisture, or through spontaneous chemical changes, and are not poisonous or explosive or unmailable for reasons other than their inflammability, shall be accepted for transmission in the domestic mails, when in quantities of not more than four ounces and when contained in tightly closed metal tubes or cans and packed in strong papier maché tubes or in boxes made of good quality double-faced corrugated pasteboard. The word "inflammable" and the proper name of the article must be plainly marked on the outside of the package.

(*c*) Substances mentioned in the preceding paragraph (*b*) when in larger quantities shall be accepted for transmission in the domestic mails when in tight and strong metal containers enclosed in tight and strong outside wooden boxes or cases; provided, that the maximum quantity of any inflammable liquid packed in one outside container must not exceed one

gallon when the flash point is 20° F., or below, and must not exceed five gallons when the flash point is above 20° F., and below 80° F., and the containers must not be entirely filled—not less than two percent of their capacity to be left vacant. The proper name of the inflammable substance contained therein must be plainly marked on the outside of the package and caution labels (red for liquid and yellow for solids) must be attached thereto by the shipper. These caution labels must be diamond-shaped, each side four inches long, with the wording printed in black letters inside of a black-lined border measuring three and a half inches on each side. The wording on the red labels to be "Notice to postal employees. Caution. Keep away from fires, stoves, radiators, lighted matches, lanterns, and direct sunlight. Any leaking package must be removed to a safe place. This is to certify that the above articles are properly described by name and are packed and marked and are in proper condition for transportation according to the regulations prescribed by the Post-Office Department.

....."
(Shipper's name)

The wording on the yellow labels to be "Notice to postal employees. Caution. Keep fire and light away. Sweep up and remove carefully contents of broken packages. This is to certify that the above articles are properly described by name and are packed and marked and are in proper condition for transportation according to the regulations prescribed by the Post-Office Department.

....."
(Shipper's name)

All such parcels to be handled outside of mail bags.

3. Liquids not spirituous, vinous, malted, fermented, or otherwise intoxicating (including samples of altar or communion wine used in church services), and not liable to explosion or spontaneous combustion or ignition by shock or jar, and not inflammable, fruits or vegetable matter liable to decomposition, comb honey, soft soap, pastes or confections, ointments, salves and articles of similar consistency, shall be admitted to the mails for transmission in the domestic mails when enclosed in packages in conformity with the conditions prescribed in Sections 474 and 475.

4. Medicines and anesthetic agents which are not outwardly or of their own force dangerous or injurious to life, health or property and not in themselves unmailable (see Secs. 454 and 480), may be admitted to the mails for transmission in the domestic mails when enclosed in packages in conformity with the conditions prescribed in Section 474: Provided, That the terms "medicines" and "anesthetic agents" shall not be construed to mean poisons. Provided, further, That the article mailed bears the label or superscription of the manufacturer thereof, or dealer therein, or of the licensed physician, surgeon, dentist, or veterinarian preparing or prescribing the same.

DEFINITION OF A "POISON."

Second Assistant Postmaster-General Otto Praeger, in a communication under date of November 23, to Smith, Kline & French Company, of Philadelphia, states:

"You ask what is the definition of a poison within the meaning of the Postal Laws and Regulations, and it is desired to say that any substance which is *required by law or the exercise of ordinary prudence to be labeled 'poison'** is considered to be poisonous and unmailable. Medicines containing cocaine, or more than two grains of opium, or more than one grain of codeine, or more than one-quarter of a grain of morphine, or more than one-eighth of a grain of heroine to the ounce, are considered to be poison and unmailable."

METRIC SYSTEM IN COMMERCE BETWEEN U. S. AND SOUTH AMERICA URGED BY INTERNATIONAL HIGH COMMISSION.

As a means of facilitating and stimulating commerce between the United States and Latin-American countries the use of the metric system is recommended in a resolution adopted by the United States Section of the International High Commission, of which Secretary McAdoo is chairman. The resolution adopted by the commission is as follows:

The United States Section of the International High Commission, having in view the present efforts to bring about the exclusive use of the metric system of weights and measures within the jurisdiction of the United States, resolves:

I. That in the opinion of the section the adoption of that system would be productive

* Italics ours.

of great advantage in the commercial relations of the United States with the other American republics.

II. That the secretary of the section be directed to communicate a copy of this resolution to the chairmen of the proper committees of the Senate and the House of Representatives.

BOOK NOTICES AND REVIEWS.

A Text-Book of Chemistry.—*Intended for the Use of Pharmaceutical and Medical Students.* By Samuel P. Sadtler, Ph.D., LL.D., Virgil Coblentz, Ph.D., F.C.S., and Jeannot Hostmann, Ph.G. Fifth Edition, revised and rewritten. J. B. Lippincott Company. Philadelphia and London. 765 pages. Price, $5.50.

The many changes and improvements in manufacturing processes, as well as the almost revolutionary changes in chemical activities, in all directions, brought about by the world war, have made the revision of almost any chemical text a matter of considerable labor.

In order to meet these conditions the present edition of this well-known and popular textbook has therefore been largely rewritten and the book shows a great number of changes. Much new matter has been added and much of that which has become obsolete has been withdrawn.

The changes in Part I devoted to Elementary Physics are particularly noticeable, the entire part having been rewritten by Prof. Jeannot Hostmann, of the Department of Pharmacy, of Columbia University. The matter is clear and concise and covers the field of special interest to pharmacy students well.

The sections on Inorganic Chemistry have been brought up to date by Prof. Virgil Coblentz, who has been in close touch with the manufacturing side of chemistry for a number of years, and therefore specially qualified for this work.

A chapter on electrolysis and its applications, describing many of the latest manufacturing processes now in use, has been added.

The section on Organic Chemistry has been brought up to date, but one is rather disappointed not to find any mention of such substances as the chloramines, dichlorethylsulphide, etc.

The book is especially well adapted to the needs of pharmacists and pharmacy students and will undoubtedly find a large field of usefulness. J. A. KOCH.

PUBLICATIONS RECEIVED.

HYGIENIC LABORATORY—BULLETIN NO. 112, APRIL 1918:

I. Phenols as Preservatives of Antipneumococcic Serum. A Pharmacological Study. By Carl Voegtlin.

II. The Nature of Contaminations of Biological Products. By I. A. Bengtson.

III. Studies in Preservatives of Biological Products. The Effects of Certain Substances on Organisms Found in Biological Products. By M. H. Neill.

IV. The Effect of Ether on Tetanus Spores and on Certain Other Microörganisms. By H. B. Corbitt.

Proceedings of the Thirty-ninth Annual Convention of the Texas Pharmaceutical Association held in Waco, Texas.

Bulletin, Oregon Agricultural College, No. 283; also an illustrated anniversary number, showing fifty years of progress.

Studies from the Research Laboratory, of Parke, Davis & Co. "The Hypodermic Use of Iron," "The Influence of the Method of Administration upon the Degree of Toxicity of Strophanthus Preparations," "Studies on Derivatives of Trihalogentertiary Butyl-Alcohols."

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Bulgara Tablets—*Bacillus Lactis Bulgaricus*, (50 in tube)	$ 9.00
Enteric Glycotauro Tablets. Standardized Purified Bile. (72 in tube)	9.00
Glycotauro Capsules. Standardized Purified Bile. (36 in box)	9.00
Glycotauro Capsules. Half size for children. Standardized purified bile. (48 in box)	9.00
Lutein Tablets—*Corpus Luteum*. 5 grains (50 in tube). (To be supplied on unspecified orders)	18.00
Lutein Tablets—*Corpus Luteum*. 2 grains (100 in tube). (New, added July, 1917)	18.00

CLASS B	
Lutein Solution Ampules (6 in box)	12.00
Mercury Biniodide Ampules. Solution in Oil. 1/6 grain each. (10 in box)	12.00
Mercury Salicylate Ampules. Suspension in Fat. 1, 1½ or 2 grains each. (12 in box)	12.00
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Phenol-sulphone-phthalein Ampules. Mono-Sodium Salt Solution. (10 in box)	12.00
Phenol-tetrachlor-phthalein. (1 gram vials)	6.00
Urease-Dunning Tablets. (40 in package)	12.00
Urease-Dunning Tablets. (500 in bottle)	72.00
Urease-Dunning Tablets. (1000 in bottle)	120.00

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Alveolar Air Carbon Dioxide Acidosis Outfit, complete	78.00
Alveolar Air and Alkali Reserve Acidosis *Combination* Outfit, complete	120.00
Blood Culture Vacuum Tubes with medium	5.50
Dialyzing Tubes, for hydrogen-ion determinations	.50
Dunning Colorimeter, for phenol-sulphone-phthalein estimations	60.00
Hydrogen-Ion Concentration Acidosis Apparatus	60.00
Keidel Vacuum Bleeding Tubes	2.00
Neutral Solution of phenol-sulphone-phthalein (1/100% 200 c. c. flask)	9.00
Rowntree & Geraghty Modification of Hellige Colorimeter. (Sale suspended)	240.00
Sodium Bicarbonate Indicator Solution. (200 c. c. flask)	9.00
Thorium Solution for Pyelography, 10%. (100 c. c. bottles)	15.00
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Thorium Solution for Pyelography, 15% (100 c. c. bottles)	21.00
Thorium Solution for Pyelography, 15%. (200 c. c. bottles)	33.00
Tubes for Sacs, for hydrogen-ion determinations	.60

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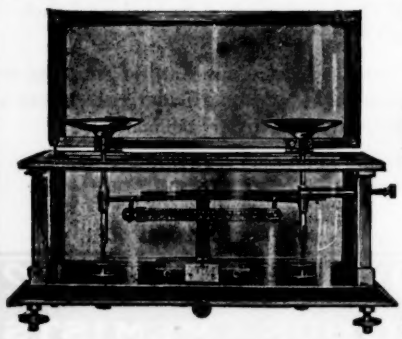

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The Advisory Committee of the American Pharmaceutical Association for Soldier and Sailor Pharmacists.

(*Signed*) C. O. BIGELOW, CHAS. E. CASPARI,
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What is business annually? _____

10th: *Would you entertain a partnership offer from a returning Pharmacist? If so, how much money required?* _____ *What is annual volume of your business?* _____

(*Signed*) _____

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